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> "The Entomologist who broadens the horizon of his observations becomes better able to grasp and comprehend the great problems presented to him."
>
> *C. H. Fernald.*

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Page 52, line 3 from bottom, *for* "second," *read* "record."
,, 76, ,, 14 from top, *for* "White," *read* "Wight."
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,, 145, ,, 7 from top, *for* "*ditis-idæa*," *read* "*vitis-idæa*."
,, 181, ,, 17 from top, *for* "Brocklehurst," *read* "Brockenhurst."
,, 181, ,, 5 from bottom, *for* "Chobant," *read* "Chobaut."
,, 181, ,, 2 from bottom *for* "*sacra*," *read* "*sacer*."
,, 230, ,, 22 from top, *for* "*binodulus*," *read* "*nodulosus*."

THE

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[VOLUME XXXII.]

NOTES ON *EREBIA MELAS.*

BY CHARLES OBERTHÜR, F.E.S.

Without doubt the European fauna still contains more than one surprise for entomologists. Plenty of collectors full of zeal and experience have already many times explored the mountain ranges of the Alps and the Pyrenees, but it is still possible to find there species of *Rhopalocera* which have escaped notice up to the present.

Before the year 1890 *Erebia melas* was only known in Hungary, Greece, Russia, and Armenia on the one hand, and in the French and Spanish Pyrenees on the other; this species had never been noticed in any part whatever of the Alpine range. It frequents, however, the Southern Tyrol, where, near Campiglio, Mrs. Nicholl in 1890, and Dr. Chapman and Mr. Lemann during the month of July in 1895, have taken a certain number of specimens.

What adds considerable interest to this capture is, that *Erebia melas* is rich in geographical variations. In no two localities does it appear to be exactly the same, and the females all appear under a different garb in each mountain region. I have dealt with this point in "Les Etudes d'Entomologie," livraison viii, pages 19—23.

In Armenia *melas* is represented by the form *Hewitsoni* (Lederer) characterized by the red band being broader, and the black ocelli, pupilled with white, being more numerous, even in the case of the males.

In Hungary the males are absolutely black without red band, generally with three ocelli, of which two are large, black, and white-pupilled on the upper wings, and three small ocelli, also white-pupilled, on the lower wings.

In Greece (Parnassus) the males are like those from Banat, Hungary, but the females are somewhat different.

In Hungary the wings on the upper-side of the females are lit up by a red band, on which stand out the black ocelli with very large white pupils on the under-side, the reddish band remains on the upper wings, but the lower wings are of a light yellowish-grey with a pretty good number of brown striæ.

The females from Mount Parnassus are darker than those from Banat, the red band is almost entirely wanting, and the lower part of their under wings (under-side) is of a deep brown tint instead of being a light yellowish-grey.

If we examine the Pyrenean types, we find in the Asturias (Picos de Europa) the males absolutely black and often without ocelli, the females also very dark with few ocelli, and with the lower wings on the under-side of a silvery-grey, much lighter towards the exterior edge, and turning darker with a thick dusting of dark atoms from the base up to about two-thirds of the surface.

In the Eastern Pyrenees the males are as in the Asturias, black, without the red band, but with rather more ocelli; the females are darker with the under-side of the lower wings brown and not silvery-grey, so that one may say that the female form from Greece (lighter) is to the female form from Hungary (darker) as the female form from the Asturias is to the female form from the Eastern Pyrenees.

In the Hautes Pyrénées both males and females have often red bands, they have many ocelli, and recall somewhat the Armenian form *Hewitsoni*.

There exists to my knowledge a form fairly intermediate between that of the Eastern Pyrenees (Mont Canigou, Pla Guilhem) and that of the Hautes Pyrénées (Cirque de Gavarnie, Pic du Midi, heights above Cauterets). This intermediate form occurs to the west of the Eastern Pyrenees department in the mountains of Cambrusdase.

How does the South Tyrol form of *E. melas* compare with those previously mentioned?

The males, like those from Greece, Banat and the Eastern Pyrenees, are black, they have three black ocelli pupilled with white on the lower wings and two larger black ocelli, also pupilled with white on the upper wings.

The female is of a deep brown colour with two large black ocelli, pupilled with white towards the apex of the upper wings, and one or two very small ones between the two larger ones; the lower wings have, above as well as below, three small black ocelli pupilled with white. All these ocelli are surrounded by a faint indication of red. On the under-side the lower wings are brown, with the nervures delicately traced in black, the grounding of the brown tint is uniform and less dusted than in the Pyrenean forms.

To recapitulate, the appearance of the Campiglio female is pretty distinct, its affinities attach it to the Pyrenean forms, but it differs from them in its smaller ocelli, and above all by the absence of the three large ocelli on the upper wings, and by the more uniform ground of the under-side of the lower wings.

It appears to me desirable to distinguish the Tyrolean form of *Erebia melas* by the name *Nicholli* (Oberthür). My collection comprises two males and one female of *melas-Nicholli*, for which I am indebted to Mr. Lemann, and one male sent me recently by Dr. Staudinger, of Dresden, in consequence of a discussion on the naming of the *Erebia* in question.

Dr. Staudinger insists on looking upon it as *glacialis*, Esper. I will not dwell upon the astonishment which an opinion so manifestly erroneous on the part of an entomologist of great experience has caused me. It is true that Dr. Staudinger only knows the male and not the female, but even without knowing the female, the matter does not seem to me disputable.

In the Pyrenees *melas* haunts the highest peaks in the vicinity of Vernet les Bains (Pyrénées Orientales).

Melas-pyrenæa disports itself on the "sea of rocks" which covers the flanks of Mount Canigou, it flies at an elevation of not less than 2500 mètres in this locality, and is very difficult to chase. It is found also on the stony slopes interspersed with grassy patches on the ascent of Pla Guilhem, and at a similar elevation. Lastly, M. Guenée and I met with it in July, 1862, on the tops of the Cambrusdase Mountains facing the fortress of Montlouis.

In the Hautes Pyrénées *melas-Lefebvrei* is abundant round about the Cirque de Gavarnie and at Mount Monné above Cauterets, but it flies very rapidly, is very shy and difficult to capture on account of the precipitous places which it affects.

At the Asturias *melas-astur* appears to be abundant on the turf and near the snow patches adjacent to the platform of the Engotabb (Picos de Europa) at about 2500 mètres. It seems to emerge earlier in this locality than elsewhere, for on July 19th, 1882, most of the specimens with which we met had lost their freshness, and were worn by flying about.

Rennes: *November 7th*, 1895.

SUPPLEMENTARY NOTES ON *EREBIA MELAS.*

BY FRED. C. LEMANN, F.E.S.

M. Charles Oberthür, of Rennes, France, to whom I forwarded this year specimens of *Erebia melas* captured by me in July near Campiglio, South Tyrol, has been good enough to write the foregoing notes (which I have translated) on this interesting species, and I feel sure that coming from his pen they cannot fail to be of interest to your readers.

I can fully confirm M. Oberthür's remarks as to the difficulties attending the capture of this insect. At Campiglio it haunts, exclusively, very steep rubble banks at the foot of perpendicular precipices, at an elevation of 7—8000 feet, where foothold is extremely precarious aud pursuit practically impossible, and the only chance of effecting a capture was when the butterfly settled, as occasionally it did, on the bare stones ; even then the irregular character of the ground afforded the prey ample opportunities for escaping under the ring of the net.

Whilst engaged in capturing *E. melas*, my companion Dr. Chapman, and myself, happened to meet a German entomologist from Dresden, to whom we showed our specimens, and he strangely enough persisted in Dr. Staudinger's assertion that the insect was *Erebia glacialis*, var. *Pluto*. I quite share M. Oberthür's surprise at this curious error on the part of German savants.

Plymouth : *November 23rd*, 1895.

EPURÆA NANA, Reitter, AN ADDITION TO THE BRITISH LIST.

BY G. C. CHAMPION, F.Z.S.

Whilst staying with my friend Mr. R. S. Standen, at Thorpe-le-Soken, Essex, at the end of August last, I captured, amongst other beetles, a very small ordinary-looking *Epuræa* by sweeping herbage in the vicinity of the saltings. This insect could could not be identified satisfactorily with any of the British species of the genus, and as it agreed fairly well with the description and figure* of *E. nana* (*binotata*), Reitter, I sent the specimen to him to compare with his types. This identification has now been confirmed, and the species must therefore be added to the British list. *E. nana* is nearest allied to *E. melina*, Er., but it is very much smaller (very little larger than *Pria dulcamaræ*), and the general shape is more oval and less elongate ; the upper surface is more shining and more finely punctured ; the antennæ have the last two joints of the club abruptly black, the apical joint being broader than in *E. melina* and nearly as wide as the tenth ; the thorax is more narrowed behind ; and the elytra are more rounded at the apex. From *E. æstiva*, Linn., it may be known, apart from its small size, by the sparser punctuation of the upper surface, and the slightly narrower apical joint of the antennæ, this and the preceding joint being black. From *E. florea*, Er., and its allies, the short oval shape and the colour of the club of the antennæ sufficiently distinguish it. The specimen, a female, has the disc of each elytron broadly and indeterminately infuscate in the middle, this being due to discoloration after death, as is often the case in various species of this genus. Reitter's original description [Rev. der europ. Epuræa-Arten), p. 15, t. 1, fig. 15 (1872)] was made from a specimen of this kind and he at first called the insect *E. binotata*, changing the name in the following year (Verh. Ver. Brünn, xii, p. 19) to *E. nana* †. This species inhabits Central and Northern Europe, the original specimen having been obtained in Switzerland; it is recorded from Finland by J. Sahlberg.

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* Except as regards the form of the hind angles of the thorax as shown in the figure.

Horsell, Woking:
December 6th, 1895.

TEN WEEKS COLLECTING *LEPIDOPTERA* IN UNST (SHETLAND).

BY JAMES J. F. X. KING, F.E.S., PERCY M. BRIGHT, F.E.S., AND WILLIAM REID, F.E.S.

Early in the year we decided to spend our holidays in the far north, with the hope of finding most, if not all, the Shetland insects.

About the middle of June we arrived at Balta Sound, where apartments had been secured for us. After unpacking our traps we turned our attention to the insects, and one of the first species that was captured in any quantity was *Hepialus humuli*, var. *hethlandica*; it occurred in fair numbers both near Haroldswick and at the Loch of Cliff; owing to its short flight (20 to 30 minutes) we had to be pretty active, jumping fences, throwing down walls, and wading ankle deep in water, &c. The ♂ of this species, as is well known, varies, in Unst, from unicolorous creamy-white wings with dark drab thorax, through a darker creamy-white with a number of dark brown markings to a dark yellow with dark brown or almost black markings; the thorax of the insects varying from a pale canary colour through various tints of drab and brown; a few specimens were obtained in which the dark markings on wings and dark thorax were replaced by a brilliant vermilion-pink; these latter specimens were very handsome. The ♀ does not vary to the same extent, although many of the specimens were of a much richer colour than those taken in either Scotland or England, the tendency being towards a grey-green colour.

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† This name is also used in his "Bestimmungs-Tabelle der europ. Col. Nitid.," 1 Theil. *Epuræa*, p. 13 (1894).

Through the kindness of Mr. Salvage we were put on to the ground for *Crymodes exulis*, of which we managed to secure between us about three dozen specimens; excepting upon one evening they were very scarce, and we calculate that each specimen cost us upon an average twenty miles' tramping through peat bogs, and over moors and road; we usually left our lodgings about 7 p.m., and arrived home somewhere about 4 a.m.; so we consider that the dealers are justified in charging what seems a high price for the species.

Day-flying species were very scarce, in fact so much so that latterly we did all our setting during the middle of the day, devoting the evening and night to collecting.

Certain *Micros* were very abundant, notably *Glyphipteryx Thrasonella*, which simply swarmed in the damp meadows everywhere.

During our stay the samples of weather provided were certainly extraordinary: fog, rain, mist, wind, with occasional glimpses of sunshine. We, on more than one tramp after *C. exulis*, got completely lost in the mist, and if it had not been for one of the party who is endowed with a keen bump of locality, we would have had to remain till daylight.

Whenever any one mentioned to the natives that the weather was execrable, the stock phrase came out that we should have visited the island in 1894, as the summer was the finest within the memory of man. Pity we did not!!

We were fortunate in seeing a number of the local common Skua or Bonxie; it is now protected upon Hermaness, a man living in a hut there, put up by Mr. Edminston, during the breeding season; we learned from Mr. Edminston that about ten pairs had hatched young during this season; it also occurs at Saxaford and a few other places south of Hermaness, but these latter have little chance of increasing the colony, as their eggs are robbed year after year.

The following is a list of the insects captured during June, July, and August, the thirteen species marked with an * being additions to the records for Shetland:—

Vanessa cardui.—This was the only butterfly seen during our stay, one specimen was taken on Crussafield towards the end of August.

Hepialus velleda.—Common almost everywhere, darker and not so brightly marked as the mainland forms; flies from sundown onwards. *H. humuli*, var. *hethlandica* was taken abundantly near Loch of Cliff, and near Haroldswick; no doubt it could be taken in any of the grassy meadows if we only happened to be there at the time of flight; the natives told us of having seen it in various localities widely distributed.

Larentia didymata was very common towards the end of August, near Burrafirth; some lovely rich orange-brown ♂s occurring among the ordinary dark ones; the ♀s were also remarkable for their pale ochraceous colour with bluish-grey fasciæ. *L. cæsiata* occurred, from the ordinary pale form to a dark brown black, the latter being very difficult to see in the gloaming; a few specimens were taken almost black.

Emmelesia albulata, var. *thules*.—This occurred in the damp meadows, and, in fact, wherever its food-plant occurred; we did not see any specimens exactly the same as those taken in the south, the markings being much more distinct, often banded together so as to form a fascia, while in many the colour was of a dull leaden or tarnished silver-grey.

Eupithecia venosata.—We succeeded in getting a number of larvæ of this species in the flower-heads of campion. *E. Curzoni* was taken in small numbers in three different localities.

Melanippe montanata was not uncommon on the hills; the contrast of colour between the markings and ground-colour being much greater than seen in specimens from the south; the var. *shetlandica* was very scarce, not a dozen specimens falling to our three nets. *M. fluctuata*.—This species was taken at odd times near the houses at Balta Sound.

Coremia munitata was very rare, in striking contrast to Mr. King's experience in 1889; the specimens taken varied much from the ordinary type, all being more or less suffused with yellow, and the markings duller and less distinct.

Cidaria immanata was to be had in fair numbers in one glen near Burrafirth towards the end of August. *C. testata*.—One specimen occurred at sugar near Balta Sound.

Leucania pallens.*—One specimen was taken flying off sugar near Balta Sound late in August.

Charæas graminis was taken from the middle of July, right on till the end of August; some nice forms were seen of a rich tawny colour with strong markings.

Crymodes exulis was our best capture, and by no means common, even for the time and trouble expended upon it; the specimens taken varied tremendously, but curiously enough a large proportion were of the beautiful yellow form, and all were males.

Mamestra furva was taken in fair numbers while searching for the above.

Agrotis suffusa was taken in rather worn condition near the lower end of Loch of Cliff. *A. cursoria*.—Towards the end of August a few specimens of this were taken on the Burrafirth Sands, they were all rather dark, and varied considerably from those seen in the south. *A. porphyrea*.—We took both pupæ and imagos of this species not uncommonly; the specimens were very large and beautifully marked, but much darker than the ordinary form; a few specimens had the colour of the ground a peculiar greenish tint. *A. lucernea*.—The few specimens of this had the colour of the wings a glossy blue-black, giving the insects a very rich appearance.

Noctua glareosa.—The ordinary type was very scarce, but in its place was to be seen the northern dark form, which may be described as a dark mahogany-black with pale markings; it was fairly common near Balta Sound flying over the heather; sugar did not seem to have much attraction for it, as only a few were taken by this means, while numbers might be found *in copulâ* on the wires stretched between the sugared posts; searching for it was rather hard work, as owing to the expense of wood the posts were not very high, and thus one has to bend down pretty low to see the things. *N. festiva*, var. *conflua.*—This species occurred in great profusion, with an amount of variation that was surprising.

Triphæna pronuba.—This was very common, and included a wide range of variation; some of the blue-grey varieties being very pretty; a number had the hind-wings of a distinctly whitish tint.

Dianthœcia conspersa.—The larva of this species when young was to be taken everywhere by collecting the flower-heads of campion, and towards the end of August by searching the flowers by the aid of a lanthorn, when the larvæ could be discovered with the body sunk in the flower-head, having crawled up the stalk from its burrow in the earth where it spends the day.

Dasypolia templi.—The larva of this species was to be found in cow parsnip, &c., in various localities, but as the plant for the most part grew in places awkward to work, our take of it was limited; the ground colour of the bred specimens is darker than usual.

Aplecta occulta.—One specimen of this occurred near the south end of the Loch of Cliff, it was light, in strong contrast to Rannoch specimens.

Hadena adusta.—This was fairly common, but worn, early in July in various localities; varied considerably, some being not unlike the Rannoch form of *C. exulis*, while others were more like *H. thalassina* in colour and markings.

Plusia gamma was as usual to be found everywhere.

Scoparia atomalis occurred all over the moors, but the specimens do not call for any remark. *S. angustea.*—A few odd specimens were taken.

Herbula cespitalis.—A few specimens of this occurred near Balta Sound, which were darker and brighter than the mainland forms.

Crambus pratellus and *pascuellus.*—Both species as usual were very common in suitable localities. *C. culmellus* simply swarmed everywhere, and might be described as the common insect of Unst. *C. hortuellus* was not uncommon.

*Peronea aspersana** was very common on all the moors towards the end of August; the colouring was much richer than usual, especially in the females.

Sericoris littorana was widely distributed, but by no means common; odd specimens might be taken by searching the rocks, from which they were very easily disturbed, and had to be caught at once or the wind carried them off; they varied considerably, some specimens being of a rich ochre colour, passing through various tints of brown to dark purple. *S. lacunana* was common all over the grassy parts of the moors and hill sides. *S. Schulziana* was not uncommon, the specimens being rather richly coloured.

Cnephasia musculana was almost past by the time we arrived in Unst, a number of worn specimens, however, were seen.

Sciaphila Colquhounana.—This species was fairly abundant where it occurred, and was to be had by searching the crevices of the rocks; the larvæ seem to feed on the lichen which covers the rocks, we found many of the long silken tubes with the pupa-cases sticking out; the moths varied considerably, some specimens being almost white with dull markings, while others were almost of a unicolorous dark leaden-blue with the markings just discernible.

Clepsis rusticana was to be obtained at odd times.

Bactra lanceolana was common in the ordinary localities; the species does not seem to vary to such an extent as in the south.

Pamplusia monticolana.—This beautiful little *Tortrix* was very common on the high moors.

*Dichrorampha herbosana.**—This species occurred. *D. consortana** was not uncommon by beating the overhanging sand banks where the millefoil grew.

Catoptria ulicetana.—One specimen of this was taken near Burrafirth.

*Xylopoda Fabriciana** was not uncommon on nettles.

Aphelia pratana.—The varieties taken of this were almost endless, some pale ochreous without markings, others with markings, some rich chestnut-brown through various tints of brown to almost black.

*Ochsenheimeria bisontella** was taken at the side of Loch of Cliff.

Tinea rusticella was very common. *T. lapella.**—One specimen of this species was taken.

Plutella cruciferarum was plentiful during the whole period of our sojourn; we captured numbers, but could not get any odd forms. *P. Dalella* was very common on the window panes, being attracted by the light, also on the banks near Burrafirth.

*Depressaria badiella.**—A specimen of this occurred.

Gelechia ericetella was not uncommon on the moors near Balta Sound. *G. terrella** occurred everywhere, and ranged in colour from pale ochreous to deep black-brown. *G. tenebrella** was taken at Haroldswick. *G. plantaginella.*—A small form of what is declared by Mr. E. R. Bankes to be this species, was to be obtained on sandy banks, covered with vegetation, near the sea, flying during hot sunshine; as the sunshine was scarce, the specimens were not plentiful; however, by working hard we all obtained a few.

Œcophora pseudospretella was common everywhere, but nothing approaching a variety could be seen.

Endrosis fenestrella.—Same as last species.

Glyphipteryx Thrasonella was to be observed in myriads in damp meadows.

Gracilaria tringipennella was not uncommon on yarrow-covered banks. *G. syringella*—Common, by beating the bushes in Mr. Edminston's wood.

*Chrysoclista Schrankella** was not uncommon in a damp meadow near Haroldswick.

*Elachista rhynchosporella** and *eleochariella** were very common on the grassy slopes of Saxaford.

Glasgow: *November*, 1895.

NOTES ON *LEPIDOPTERA* AT HUDDERSFIELD IN 1895.

BY GEO. T. PORRITT, F.L.S.

As bearing on Mr. Barrett's recent paper on "Melanism" (Ent. Mo. Mag., August and September, 1895), it may be worthy of record that the unicolorous dark olive form of *Phigalia pilosaria* was taken more freely here this year than ever before. The black form of *Boarmia repandata* I believe was common again, judging from the proportion I saw just as the species was coming out, but having to leave home for some time immediately after, I had no chance of working it. *Amphidasys betularia* is never a very abundant species here, but the few I did see were, without exception, of the black form, and two of the females were among the largest I ever saw. *Cidaria immanata* was abundant, but few pale ones, and some almost entirely rich velvety-black; the only *C. russata* I saw was also a black one. *Thera variata* was of the dark Scotch form, and *Boarmia rhomboidaria* were all of the *perfumaria* variety, as is always the case with us. Among the small moorland *Hysipetes elutata*, the black and very dark forms seemed to largely preponderate as usual. In an abundance of *Miana strigilis*, the specimens were almost without exception of the black var. *æthiops*, not a single pale one, so far as I saw occurring among them; whilst black and dark brown *Xylophasia polyodon* were so frequent that one might have been sugaring in a Highland wood. In the spring *Diurnea fagella* was in abundance, but I do not think I saw a single pale one, and many, perhaps most, were inky-black. On the other hand, *Hibernia progemmaria* did not appear to me so dark as I have seen it in some former seasons; and the same applies to *Polia chi*, which, however, was much scarcer than usual.

Turning from melanism, the most noticeable event of the year was undoubtedly the extraordinary abundance of *Orthosia suspecta*, which occurred in far greater profusion than I have before seen it, the birch woods seemed "alive" with it—thousands of it everywhere. It even found its way into my own, and, no doubt, all the neighbouring gardens and houses. Earlier in the season twigs of birch, gathered casually for feeding other larvæ, had *suspecta* larvæ on them, and yet until quite recently this larva was scarcely known. On some evenings we noticed the females in numbers depositing their eggs, with the long ovipositor, in the crevices and under the bark on the *trunks* of the birch trees. Another species which occurred in unusual numbers was *Cloantha solidaginis*, in all the woods having an undergrowth of bilberry, and especially common in the Savile Wood; it also came into the garden, as did *Noctua glareosa*, *Agrotis lucernea*, *Eubolia cervinaria*, &c. Larvæ of *N. glareosa* were found both this and last year feeding commonly on the leaves of the wild hyacinth, which is, I believe, an unrecorded food for the species. After some years of apparent scarceness, *Acidalia inornata* occurred commonly in the Savile and Meltham Mills Woods; and the same may be said of *Eupithecia fraxinata* on the ash trees on the north side of the town. *Acidalia fumata* was common in one locality; as was *Scodiona belgiaria* on Crosland Moor. *Hadena glauca*, *Acronycta menyanthidis*, *Xylophasia scolopacina*, *Dasypolia Templi*, dark blue banded *Melanippe galiata*, &c., occurred in various localities.

In the autumn the gardens and lanes were enlivened with more *Vanessa Atalanta* and *V. urticæ* than have been seen for probably more than twenty years; at sugar, *Anchocelis rufina* in grand variety, in point of numbers took the place of *Orthosia suspecta*; *Cheimatobia boreata* was in profusion in the birch woods, along with plenty of *Hybernia aurantiaria* and *H. defoliaria*; whilst crowds of male *Lemmatophila phryganella*, along with plenty, but in smaller numbers, of *Exapate gelatella* are now flying whenever the weather is favourable in this immediate district. Lastly, a specimen of *Acherontia Atropos*, taken in one of the villages outside the town some weeks since, was brought to me a few days ago. In the early part of the season sallows were more productive than they have been for years, but sugar was useless up to near the end of June, when several heavy thunderstorms took place, which evidently washed off all the honeydew from the trees, after which moths came to the artificial sweets in abundance, with an occasional break, right up to the end of the season. Notable absentees at sugar were *Xylophasia lithoxylea* and *Tryphæna orbona*, of course two usually abundant species, but of neither of which did we see a single specimen. The absence of both seems inexplicable, as their near relations, *X. polyodon* and *T. pronuba*, were in great force and variety; only one *T. fimbria* occurred, and although *T. janthina* occurred in the garden in both larval and perfect stages, none visited sugar. Altogether, the season in this district has been the best we have had for some years.

Crosland Hall, Huddersfield:
November 12*th*, 1895.

NOTES ON BUTTERFLIES OBSERVED IN THE SOUTH OF SPAIN IN JUNE, 1895.

BY WILLIAM EDWARD NICHOLSON, F.E.S.

In company with Mr. G. C. Champion I landed at Gibraltar on the 28th May last. Although comparatively early in the season, we found it oppressively hot, and the higher part of the rock already presented a dry and parched appearance. The rock is classic ground for the entomologist after the researches of Mr. J. J. Walker, which have been already recorded in this Magazine, and in the Transactions of the Entomological Society of London. It was, however, too late for the special species of the rock, and after exploring it to very little purpose from an entomological point of view, we were not sorry on the next morning to find ourselves again on the sea crossing the Straits to Tangier. At Tangier so much had to be compressed into a short space of time, that we had little opportunity for entomological work. Unfortunately the boat service is irregular, and as the boat we came over in was leaving the next day at noon, we had to make up our minds to return by it. Before leaving, however, we made an early start on mules and explored the country to the south-west of the town. A short ride took us along a narrow street past the Soko, where the weekly market (truly a motley gathering) was being held, into the suburbs, where we passed by lanes bordered with fences of *Arundo donax* and shaded by *Eucalyptus* into the open country. In the more open parts of these lanes several specimens of *Euchloë Eupheno*, L., which is confined to this side of the Straits, were seen with a single *Argynnis Pandora*, Schiff., and occasional specimens of *Vanessa Atalanta*, L., or one of the common species of *Pieris*, while the more shady portions literally swarmed with a very fulvous form of *Pararge Ægeria*, L. On emerging into the open country we came upon a succession of low treeless hills covered with a scrubby growth of the dwarf palm, *Chamærops humilis*, *Cistus*, and other shrubby plants, dotted about among which were the homesteads of the country people, consisting of low thatched huts, and protected by a chevaux de frise of *Opuntias*. The only butterflies noticed in this part were *Colias Edusa*, F., and *Lycæna bætica*, L.

We did no serious entomological work on our return to Spain until we reached Ronda, to which a line through very picturesque country, embracing the well-known Cork Woods, has been recently opened. Ronda is situate on a table land which rises abruptly on the west and south-west to the height of nearly 1000 feet above the valley below, and although very arid and barren-looking at first sight, we found that butterflies were more plentiful here than at any other place we visited. We met with most species in a small flowery gorge between cultivated fields to the south-east of the town, whose tiny rivulet paid its tribute to the torrent which eventually forms the beautiful waterfall of Ronda. We also found open country and several species of *Lepidoptera* in the valley to the south-west of Ronda below the waterfall. Only two days were spent there, and the 2nd June found us on the Alhambra Hill at Granada. There were many other things to be seen and done at Granada, but from an entomological point of view we were a little disappointed. Our principal collecting ground was the dry reddish hillsides just beyond the cemetery, the monotony of which was relieved by the silvery bushes of *Retama sphærocarpa*, Bss., with considerable patches of *Phlomis* and *Marrubium*.

From Granada we made an expedition to "La Estrella" mine where we were hospitably entertained by the lessee, M. Louis de Pelsmaeker, and by means of which we were enabled to explore the higher parts of the Sierra Nevada, which we ascended to the height of 9000 feet. The path to the mine lay past the cemetery and across the lower slopes of the dry barren hills above the right bank of the river Xenil as far as the town of Huejar, soon after passing which we ascended the mountains by a winding path up a narrow valley, the torrent from which joined the Xenil on the left. The vegetation was here more luxuriant, and a few species were noticed which were not seen below. Although a considerable number of *Coleoptera* and some very local plants were found in the mountains above the mine, we saw very little in the way of *Lepidoptera*, and no alpine butterflies were observed at all.

The scarcity of butterflies in the higher regions so different from what one finds in the Alps and Pyrenees is very remarkable, but may be partially attributed, as regards the number of specimens, to the dryness of the air and the general scantiness of vegetation, and, as regards species, to the fact that the butterfly fauna of Central Europe is here on the limit of its distribution, and has received but few immigrants from Africa. The absence of alpine butterflies is confirmed by a perusal of Rambur's "Catalogue systématique des Lépidoptères de l'Andalousie," in which *Parnassius Apollo*, L., *Polyommatus Gordius*, E., *Melitæa Parthenie*, Bork., *Argynnis Niobe*, L., *Erebia Tyndarus*, E., and *Syricthus carthami*, Hb., are the only alpine butterflies recorded for the whole of Andalusia, which is very mountainous with peaks in the Sierra Nevada rising to over 11,000 feet.

The most interesting butterflies noticed in Spain were:—

Thaïs rumina, L.—Several specimens of this species, more or less worn, were noticed between Huejar and the house at La Estrella mine. It was also taken at Ronda, where a full grown larva, one just hatched, and some ova were found upon a plant of *Aristolochia glauca*, showing that the species must be on the wing for some time.

Pieris Daplidice, L., and *Euchloë Belia*, var. *Ausonia*, Hb.—Both these species were common at Granada and Ronda in dry open places.

E. euphenoides, Stgr.—Not uncommon between Huejar and La Estrella mine at an elevation of about 4000 feet.

Zegris Eupheme, var. *meridionalis*, Ld.—Five specimens of this interesting species, all more or less worn, were taken in the gorge to the south-east of Ronda We were no doubt at least three weeks too late for it, as M. René Oberthür had informed me that his brother found it nearly over at Granada on the 11th May last year. It flies very rapidly in the hottest part of the day, and, but for its habit of occasionally alighting on the flowers of a *Sisymbrium* and a *Biscutella*, which grew at the margins of the fields, it would be very difficult to catch. The Spanish species, which differs from the type, as found in Russia, in being slightly larger and in the green markings of the under-side being yellower, is regarded by some authors as a variety of a distinct Russian species, *Z. Menestho*, Mén.; but I have followed Kane in considering it a variety of *Z. Eupheme*, E., of which *Z. Menestho* itself is probably only a local form. As noticed by Kane, its discontinuous distribution, which it shares with *Satyrus Hippolyte*, E., being taken only at the extreme south-west and south-east corners of the continent is very remarkable.

Colias Edusa, L.—This was the only species of *Colias* observed. It occurred in waste places near Gibraltar and Granada, but was not very common.

Gonepteryx Cleopatra, L.—Several were noticed from the train as we passed through the cork woods.

Thecla quercûs, L.—A few larvæ were beaten from a species of oak, allied to *Quercûs pubescens*, Willd., the leaves of which were downy beneath, between Huejar and the miners' house. The resulting imagines are rather less distinct on the under-side than the English form.

Polyommatus Alciphron, var. *Gordius*, E.—A few specimens were taken between Huejar and the mine at an elevation of about 4500 feet. *P. Phlæas*, var. *Eleus*, F. Well marked specimens of this variety occurred at Ronda.

Lycæna Ægon, Schiff.—A large form of this butterfly, which is very pale on the under-side, was captured above Huejar. It appears to be referable to the var. *hypochiona*, Rbr., which is described by Rambur as a distinct species. *L. Alsus*, var. *Lorquinii*, H.-S.—A single specimen of this beautiful variety was taken in a damp spot in the road near Huejar. The under-side of the wings does not differ appreciably from that of the type, but the upper-side is as blue as it is in *L. Acis*, O.

Vanessa urticæ, L., and *V. cardui*, L.—A few worn specimens of these species with a single *Argynnis Latonia*, E., represented all the butterflies that were noticed in the Sierra Nevada above 6000 feet elevation.

Melitæa aurinia, var. *Desfontainii*, Gdt.—A single specimen of this fine local form was taken above Huejar at an elevation of 4500 feet. *M. Phœbe*, Kn.—Not uncommon both at Granada and Ronda. A specimen of the var. *Ætherie*, Hb., in which the black markings, are obsolete with the exception of a broken band of spots across the fore-wings, the discoidal spot and the marginal bands of all the wings, was taken at Ronda.

Argynnis Pandora, Schiff.—Noticed near the cemetery at Granada sunning itself on the flowers of *Armeria allioides*, Bss., and also near Huejar.

Melanargia Syllius, Hbst.—A few specimens were taken near the cemetery at Granada; but it was nearly over on the 5th June, as the specimens were all females and rather worn. *M. Ines*, Hffgg.—One of the commonest butterflies both at Ronda and at Granada. The size and the pupils of the ocelli on the under-side of the hind-wings are very variable.

Pararge Ægeria, L.—A fulvous specimen of the extreme southern form was taken near Huejar, but it did not appear to be very common.

Epinephele Ida, E—Quite the commonest butterfly on the dry hills beyond the cemetery at Granada; it also occurred at Ronda. *E. Pasiphaë*, E.—Not so common as *E. Ida*, but fairly plentiful at Ronda.

Spilothyrus althææ, var. *bæticus*, Rbr.—Not uncommon both at Ronda and Granada, wherever the food-plant (*Marrubium hispanicum*, L.) grew freely. It differs from the type in being paler above, while the white spots on the under-side of the hind-wings are larger and more numerous, which, with the white nervures, give it a very blanched appearance. It is described by Rambur as a distinct species, but there can be no doubt of its identity with *S. althææ*. The bleached look of this insect recalls the parallel varieties, *Lycæna Corydon*, var. *albicans*, H.-S., and *L Dorylas*, var. *nivescens*, Kef., which occur in Spain. The same tendency is noticeable in some of the steppe insects from Russia, and would seem to be in some way connected with the arid wastes that these insects frequent. Much has been written on the subject of melanism, but the causes of albinoism, with which we are less familiar in England, are worthy of investigation.

Syricthus Proto, E.—Common both at Ronda and at Granada in dry open places wherever the species of *Phlomis* grew. A pupa was beaten at Ronda from *P. lychnitis*, L., and several larvæ from *P. purpurea*, L. The larvæ live in the ends of the shoots, which they spin together, and eventually form a loose cocoon in the same. Most of the larvæ were infested by Hymenopterous parasites.

Although I was constantly on the look out for day flying moths, especially in the mountains, a few only came under my notice. The principal were :—

Zygæna Sarpedon, Hb.—Dry hills near Granada. *Z. Fausta*, L.—One specimen was taken in the gardens of the Alameda at Gibraltar, which appears to be referable to the var. *Faustina*, O.

Aglaope infausta, L.—The larvæ of this curious little Zygænid were beaten in some numbers from hawthorn at an elevation of 4500 feet in the Sierra Nevada. The moths emerged in July on my return to England. It is stated by Rambur to be very abundant in Andalusia, and occasionally destructive to fruit trees.

Metoptria monogramma, Hb.—Dry places near Granada, with habits somewhat like *Euclidia glyphica*, L.

Athroolopha chrysitaria, H. G.—A very beautiful day-flying Geometer with golden-yellow hind-wings, and the fore-wings black marked with white. It was probably not uncommon on the hill sides below Huejar, but only a few specimens were secured.

Eupithecia pulchellata, Stph.—The larvæ of a species of *Eupithecia*, probably *E. pulchellata*, were not uncommon in the flowers of *Digitalis obscura*, L., a species of foxglove with dull ferruginous flowers and a half shrubby stem, which grew freely near Huejar.

Lewes: *October* 11*th*, 1895.

A NEW GENUS OF *CYRTIDÆ* (*DIPT.*) FROM NEW ZEALAND.

BY BARON C. R. OSTEN SACKEN, PH.D., HON. F.E.S.

Three genera of CYRTIDÆ—*Philopota*, W., *Thyllis*, Er. (*Megalybus*, Westw.), and *Terphis*, Er.—form a very remarkable group (*Philopotina*, Schin.), distinguished from all the other genera of the family, and, as far as I know, from all other *Diptera*, by an extraordinary development of the so-called prothoracic humeral lobes, which, in this case, are *contiguous* in front of the thorax, while in the other *Diptera* they are separated by a broad interval.

In his "Elementary Manual of N. Z. Entomology," London, 1892, G. V. Hudson, of Wellington, N. Z., has published a new *Cyrtid*, which he called *Acrocera longirostris*, and of which, at my request, he very kindly communicated to me a specimen. In this species I recognised a new genus belonging to the above-mentioned remarkable group, and of which, although not a specialist in *Cyrtidæ*, I do not hesitate to publish a description.

HELLE*, *gen. nov.*

May be briefly described as a *Philopota*, Wied., with the venation of *Thyllis*, Erichson. As the only species of *Philopota* in my possession is *P. murina*, Lw., from Asia Minor, I shall compare *Helle longirostris*, Huds., with it, and refer at the same time to Loew's description and figures of *murina* (Stett. Ent. Zeitung, 1844, p. 162, tab. ii, figs. 17—21).

Eyes glabrous, contiguous above the antennæ as far as the ocellar triangle. Three ocelli. *Antennæ* inserted about the middle of the head (seen in profile), very small; second joint incrassate at base, and attenuated beyond it in the shape of an arista-like prolongation. Face elongate-triangular (Loew, fig. 19). *Proboscis* elongate, about double the length of the longitudinal diameter of the head (the end of it in my specimen may be broken off, because Mr. Hudson's figure represents it as much longer). *Hind-part* of the head swollen, especially below, towards the cheeks (in *P. murina* it is rather the upper part of the occiput which is swollen, Lw., fig. 18).

Thorax gibbous (less, however, than in *P. murina*); prothoracic lobes contiguous along a rather long suture, on both sides of which they expand hindwards, so that the hind margin of the prothorax shows a deep emargination (Lw., fig. 17). The structure of the præ- and post-alar lobes is very like that of *P. murina*, only their surface is more convex; a distinct little ridge (also described by Loew in *P. murina*) runs from the root of the wing towards the scutellum; the latter is also a little more convex than in *P. murina*.

Venation almost complete, like that of *Thyllis*, Er. ("Die Henopier," fig. 5); a single submarginal cell; an elongate, somewhat pentagonal, discal cell; four posterior cells, incomplete, in consequence of the post-discal veins not reaching the apex; two distinct basal cells; the anal cell closed long before the margin, its petiole stunted a little before reaching the margin. The first vein, at its end, shows an elongate, fusiform, stigma-like black swelling (such a swelling does not exist in *P. murina**).

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* *Helle* is the name of the mythological personage who was drowned in the Hellespont, and gave her name to it.

The venation may likewise be compared to that of *Megalybus pictus*, Westwood, Trans. Ent. Soc. Lond., 1876, tab. v, fig. 4*a* (a Chilian species), the differences will be mentioned below, in the specific description.

Tegulæ large. *Legs* smooth, without spurs, comparatively slender (for a *Cyrtid*); tarsi but little shorter than the tibiæ; joints 3 and 4 are the shortest; both together nearly equal to the 1st in length; joints 2 and 5 shorter than the 1st (nearly the same proportions exist in *murina*). Three pulvilli. *Abdomen*: first segment short; the five other dorsal segments are longer, and nearly of the same length, with coarctations at the incisures; in shape the abdomen is more oval than that of *murina*.

I compared *Helle* with *Philopota murina* from Asia Minor. The *eleven* other described *Philopotæ* are South American, and it remains to be seen in what other characters they may differ from *Helle*. For instance, they are described by Erichson as having pubescent eyes, while the eyes of *Helle* and *P. murina* are glabrous.

HELLE LONGIROSTRIS.

Acrocera longirostris, Hudson, Manual, &c. (1892), p. 56, Tab. vii, fig. 4.

Face brownish-yellow, its upper part nearly black; proboscis pale yellow; frontal triangle brownish-yellow; antennæ brownish, pseudarista paler; hind part of the head black, with a microscopic pale golden down (that looks silvery in an oblique light). The upper part of the thorax, including the scutellum, of an opaque greenish-bronze colour, densely marked with microscopic transverse striæ, and covered with a hardly visible miscroscopic pale golden down; the prevailing bronze colour fades, and changes into yellowish-brown along the edges of the thoracic sclerites, especially about the shoulders, behind the root of the wings, and on the posterior margin of the scutellum. The abdomen is of the same metallic greenish-bronze colour, microscopically, and densely punctured, clothed, like the thorax, with a microscopic pale golden pubescence (which, in an oblique light, appears silvery). The posterior edges of the dorsal and ventral segments yellowish-brown, which colour also forms a somewhat broader margin along the lateral sutures. Tegulæ uniformly whitish, semi-transparent; knob of the halteres yellowish-white. Coxæ and femora brown, paler about the trochanters; tibiæ pale brownish, still paler at the base; tarsi pale brownish, the joints pale yellow at the base. Wings hyaline, slightly tinged with brownish; veins brown. The venation, as I said above, is almost exactly like that of *Megalybus pictus* (Chili), as represented by Westwood (*l. c.*, fig. 4*a*). The differences are as follows: the auxiliary vein is not figured by Westwood; the first longitudinal of *Helle* (as described above) has a fusiform, black thickening at the end, which end reaches farther distad than in Westwood's figure; the post-discal veins do not reach the margin; the prolongation of the costal vein along the margin stops short a very little distance beyond the tip of the third vein, just before the apex, so that there is no vestige of an *ambient* vein along the posterior margin (this character is not delineated in Westwood's figure).

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* I had occasion to examine numerous specimens of both sexes in the Berlin Museum.

The specimen seems to be a male. Length, 5—6 mm.

Mr. Hudson has the following notice about the occurrence of this species:—"An extraordinary and very rare species, occurring among *white rata* (*Metrosideros scandens*) blossoms in February. At present I have only taken three specimens, viz., two in Wellington and one in Nelson."

Heidelberg: *October*, 1895.

Useful Trap for Insects.—I must explain that what is here called "a trap" was never originally intended for the purpose of catching insects; but as it has proved very effective, I mention it for the benefit of collectors who may have access to similar structures. It consists of a small glass covered way, with a pent roof, about three feet long, quite open to the garden, and connecting the potting shed with a greenhouse. When once inside insects seldom make their way out again, and are easily pill-boxed whilst buzzing against or crawling upon the glass. In this way I have during the past season picked out the following *Diptera* from a host of commoner species, and those marked with an asterisk were only taken in the trap.

**Chrysonotus bipunctatus* (5 ♀), **Sargus flavipes* or *cuprarius* (3), *S. infuscatus*, **Beris clavipes* (1), *Chrysops cæcutiens*, *Chrysopilus auratus*, *Laphria marginata* (1), besides two taken in garden and six in the Forest, *Leptis lineola* (1), *Rhamphomyia variabilis*, *Empis trigramma*, *E. lutea*, **Orthoneura nobilis* (1), *Chilosia flavimana*, *C. scutellata*, *Melanostoma hyalinatum* (2 ♂ and ♀), **Didea fasciata* (1), *Syrphus tricinctus*, **Xanthogramma citrofasciatum* (1), *Baccha elongata* (8), *Eristalis intricarius*, *Merodon equestris* (7), **Criorrhina berberina* (2), *Xylota sylvarum*, **Spilomyia speciosa* (1), *Chrysotoxum octomaculatum* (2), *C. festivum* (1), and *C. bicinctum*, *Conops quadrifasciatus*, *C. ceriiformis*, **Stevenia maculata* (1), **Lissa loxocerina*, *Acidia cognata*, *Tephritis parietina*, *Palloptera umbellatarum*, and *Toxoneura muliebris*, besides sundry *Dolichopodidæ*, *Tachinidæ*, *Anthomyidæ*, &c., not yet identified. As regards other insects, *Hymenoptera* came next in point of numbers, followed by *Lepidoptera*, *Coleoptera*, *Hemiptera*, &c.—F. C. Adams, Fern Cottage, Lyndhurst: *November*, 1895.

Xanthia ocellaris in Surrey.—I captured two specimens of this insect in the neighbourhood of Richmond, Surrey, in September last. The first was taken on the 15th, and has various dark markings at the centre and base of the fore-wings, which, in the second specimen, are replaced by merely a dark shade; this latter was found on the 21st, is generally lighter in colour, and has the white markings more prominent.—Wilfred A. Cope, 30, Crescent Road, Bromley, Kent: *Nov. 22nd*, 1895.

Sterrha sacraria, L., in the Isle of Purbeck.—On Saturday, September 7th, whilst out partridge shooting with my brother, at 3.45 p.m., in a barley stubble about half a mile from this house, I happened to disturb a small yellow moth, which, after a short flight, settled down. Imagine my delight when on cautiously creeping up I saw at a glance that it was *Sterrha sacraria!* My first attempt to box it only stirred it to fresh activity, but after a few more evolutions it again settled, and clasping an upright stalk folded its wings much in the manner of *Cilix spinula.* This time success crowned my efforts, and the prize was mine! It is a fine but not highly coloured male specimen, and its fringes are so perfect that one is inclined to think that it must have been bred near the spot, in which case I expect it is the offspring of a moth that came over from the Continent in the early summer. The spot was well worked in the hope of meeting with others of the same brood, but no more were seen. It would have been more satisfactory if the captive had been a female ready to oviposit, but one must not expect too much, and the insect has been so rarely taken of late years in Britain that it is quite refreshing to be able to record its occurrence. The only example of *S. sacraria* previously captured in Dorset was secured by Mr. C. R. Dale at Holwell on August 31st, 1867.—Eustace R. Bankes, The Rectory, Corfe Castle: *November 20th*, 1895.

Grapta c-album and Nonagria lutosa at Brighton.—On September 25th last I found a specimen of *Grapta c-album* on the playground wall at the College here; the wings were somewhat chipped, and it had evidently been out some time. Mr. Vine tells me that he saw one at Shoreham, five or six miles off, three years ago, and Mr. Fletcher tells me that he has heard of one occurring at Worthing, six miles beyond Shoreham, this year. On October 24th I found a specimen of *Nonagria lutosa* at rest on a tree in the Pavilion grounds here, a good six miles from the nearest reed beds, which are at Shoreham.—A. F. Griffiths, Brighton: *December 4th*, 1895.

The larva of Mamestra sordida (anceps).—I can corroborate, from my own experience, the stated resemblance of the larva to that of *Apamea basilinea*, although unfortunately I cannot supply a description taken from nature. I picked up a larva, then small, on grass on the Culver Downs, Isle of Wight, while looking for *Luperina testacea*, &c., on July 23rd, 1893, and so unhesitatingly took it to be *A. basilinea*, which I had taken in the same manner the previous year, that I took no special notice of it at all, but in due course it produced a specimen of *M. sordida.*—Louis B. Prout, 12, Greenwood Road, Dalston, N.E.: *December 5th*, 1895.

Hadena peregrina, Tr., as a British insect.—My friend Mr. Meyrick's new "Handbook" does not, as a rule, err on the side of omitting species having often the most slender claims to be considered "British;" it was therefore with surprise that I found no mention of *H. peregrina* therein. In the "Entomologist's Annual" for 1859, p. 147, Mr. Stainton wrote, "In September, 1857, Mr. Bond took a specimen at Freshwater in the Isle of Wight; the insect is a native of Southern Europe and attached to low coasts." This example was figured in Newman's "British

Moths." In the "Zoologist" for 1859, p. 6734, there is a note signed by myself to this effect:—"I have much pleasure in recording the capture of a second specimen of the above insect: I took it on the 23rd ulto. (August) at sugar, within a few yards of the place where Mr. Bond captured his specimen last year (should have been 1857); it is a female and in beautiful condition." This specimen was exhibited by me at the Meeting of the Ent. Soc. Lond., Sept. 5th, 1859, and is noticed in the "Ent. Annual" for 1860, p 140; it is still in my possession. I think there have been subsequent records: these I have not traced out, considering the foregoing to be sufficient. The specific name would imply migratory habits. My example is in such a condition that it might have been bred on the spot, and I have no reason to suppose it was not; I think this was also the case with Mr. Bond's specimen; and from its nature it is an insect that would soon show traces of weathering.—R. McLachlan, Lewisham, London: *December 14th*, 1895.

Forficula auricularia, var. forcipata, Steph., in the Channel Islands.—On the west coast of Guernsey lies the small islet of Lihou. It is connected with Guernsey by a rough causeway, said to have been constructed by the monks (the ruins of whose monastery is still to be seen) to enable them to cross from one island to another during low tides. This causeway is about 700 yards long, and is covered during at least half of every tide. The islet is of rectangular shape, and is about 600 yards long, by 150 wide. It contains one inhabited house, with a few small patches of cultivated ground. The remainder is very sandy soil, covered with grass and short herbage, and abounding in wild rabbits. Near the shore under stones I found numerous specimens of a large earwig; I submitted examples of these to Mr. Saunders, who considered them to be *Forficula auricularia*, var. *forcipata*, Steph. I find, however, that Stephens, who gives an excellent figure of this variety in his "Illustrations," states that it is found in high trees at Coombe Wood, and also in the New Forest. I have found the same variety on another but much smaller islet, not far from Lihou, called Chapelle Dom Hue, which is about 400 yards from Guernsey, and also only accessible at low tides.

I have searched the coast of Guernsey opposite these islets, but have found only ordinary specimens of *F. auricularia*. The large and curious spider, *Atypus Sulzeri*, Latr., is also very common on both these islets, many of their tubes going down to a great depth in the sandy soil.—W. A. Luff, Guernsey: *October 26th*, 1895.

Periplaneta australasiæ at Kew.—Some two years ago I came into possession of a specimen of a *Periplaneta* taken by the Rev. Windsor Hambrough several years ago in one of the plant houses at Kew. Having then only just turned my attention towards our *Orthoptera*, I looked upon it as a variety of *P. americana*, and having duly labelled it, placed it amongst my series of that insect, where it remained unnoticed. Some few weeks ago on pointing out its peculiarities to Mr. W. J. Lucas, he told me that he had recently taken an identical specimen, also in a plant house at Kew. This led me to look to Mr. Eland Shaw's excellent description of the species in his Monograph of our British *Orthoptera* in the Ent. Mo. Mag., from which I found out what my specimen was, and I have since verified it by comparison with the British Museum series. From the interval that elapsed between the dates of the capture of these two specimens, I think that we may infer that the species is now as well naturalized at Kew as its congener *americana* is at the Zoological Gardens.—C. A. Briggs, 55, Lincoln's Inn Fields : *November* 28*th*, 1895.

[During the last two or three years *P. australasiæ* has been submitted to me from hothouses in various parts of the country ; it appears to be thoroughly established with us.—R. McLachlan].

Review.

The Cambridge Natural History, Vol. v, Insects, Part i : by David Sharp, M.A., M.B., F.R.S. Pp. 83—584, 8vo. Macmillan & Co., London and New York. 1895.

So far as the general subject of Entomology is concerned, the latter part of the 19th century will probably for long remain remarkable on account of the numerous works on it in the English language that then appeared. It is no disparagement to any of them to say that not one aims at superseding Westwood's "Introduction," which, after more than fifty years, remains unique in its method of treatment, and is likely to remain so. It has long been known that Dr. Sharp was engaged on the *Insecta* for the "Cambridge Natural History;" the first part has now appeared, and on the whole it more than fully sustains our anticipations. The illustrations (all in the text) are very numerous and judiciously selected, and what is more to the point the majority of them are absolutely original, those that are not so being mainly restricted to matters of internal anatomy. The labour involved in the preparation of the letter-press can only be rightly understood by those who have had occasion, possibly on a smaller scale, to do similar work, and we venture to think that the knowledge acquired by the author during the process will go far to supplement the thanks that will be accorded him by his readers.

To systematically go through a work of this nature for the purpose of picking holes would be invidious ; we leave that task to those to whom it may be more congenial; there is only one point, not a matter of detail, to which we propose to take exception. The following is the classification or sequence of Orders adopted :— *Aptera* (= *Collembola* and *Thysanura*), *Orthoptera*, *Neuroptera* (nearly in the Linnean sense), *Hymenoptera*, *Coleoptera*, *Lepidoptera*, *Diptera*, *Thysanoptera*, and *Hemiptera*. We are not aware if this precise sequence has been previously suggested by any other author or authors, and it seems to be more or less a reversion to or adaptation of the Linnean and Fabrician systems, the broad divisions of "perfect" or "imperfect" metamorphosis so long adopted by most modern scientific writers being disregarded. This we consider a retrograde step, not far removed from a reversion to the Linnean system in a modern work on Botany, and it may be due to our obtuseness, but we confess ourselves unable to grasp the terms "very little," "slight," "great," "very great," &c., used to express degrees of metamorphosis. Dr. Sharp seems to think we yet know too little for the grounding of any system, but we venture to believe we know enough to render the mixing up of the two grand divisions of metamorphosis unnatural.

This Part i consists of a minutely detailed introductory portion of nearly 100 pages; and then, according to the system adopted, come the *Aptera*, *Orthoptera*, *Neuroptera*, and part of the *Hymenoptera*. And we regard this first part with the greatest satisfaction, because it is too often the practice in works of this kind for the author to unduly enlarge upon the Order or Orders he may have specially studied to the detriment or practical wiping out of the rest. The Orders just mentioned are treated on at such length as to leave doubts in our mind as to how those that remain are to be got into a second volume, to which the author is limited. As an example, we need only allude to the Family *Termitidæ*, which occupy nearly 35 pages, forming probably the most complete concise account of these wondrous creatures that now exists, largely drawn up from the recent researches of Grassi, and of Dr. Haviland, the latter the more valuable because they remain otherwise unpublished. We could multiply similar instances; in fact there is scarcely any salient feature that is not alluded to, and the text in each case is almost always emphasized by a suitable illustration. We venture to think the work will be found indispensable to all who seek to extend their general knowledge beyond the narrowing influence of exclusive attention to certain Orders or Groups, and that it will take a high position in "The Cambridge Natural History" series.

The first 80 pages of the Vol. do not concern true insects, but are occupied by what amounts to a monograph of that singular genus *Peripatus*, by Adam Sedgwick, M.A., F.R.S., and an account of the *Myriapods*, by F. G. Sinclair, M.A.—R. McL.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY *November* 14*th*, 1895.—T. W. HALL, Esq., F.E.S., President, in the Chair.

Mr. Griffith, of Bristol, was elected a Member.

Mr. Briggs exhibited a living specimen of the Madeira Cockroach, *Panchlora maderæ*, taken in Covent Garden market. Mr. Edwards, specimens of the rare Morphos, *M. cacica* and *M. Neoptolemus*, from Peru. Mr. R. Adkin, a series of *Emmelesia tæniata*, St., from Co. Kerry, lighter than the English form, and a specimen of *Arctia Caja*, L., from Louth, with very intense black-brown markings. Mr. H. W. Williams, a bred series of *Oporabia dilutaria*, Bork., including two very dark uniform specimens and one with a light marginal area. Mr. McArthur, living larvæ and a recently emerged imago of *Triphæna comes*, Hb., var. *Curtisii*, Newm., from Orkney, and said that all the captured ones were of that form. Mr. Turner, a specimen of *Phorodesma smaragdaria*, Fb., unique in being bred on Sept. 26th, and several varieties of *Vanessa urticæ*, L., one of which had the central spots reduced to minute dots. Mr. Mansbridge, a series of *Scoparia basistrigalis*, Knaggs, taken at sugar in Epping Forest. Mr. Sturt, a living larva of *Sphinx convolvuli*, L., from Cornwall, with drawings of the others he had had. It was noted that one specimen was of the rare striped form of the larva. A discussion took place as to the necessity of forcing the pupæ of the larger hawk-moths. Mr. South, a short bred series of *Acronycta menyanthidis*, View., from Macclesfield, and stated that the larvæ much preferred sallow as food although a few fed on birch. Mr. Ashdown, a number of *Lepidoptera*, including a strange var. of *Melanippe sociata*, Bork., having a light looped band from the costa, including the discoidal spot. Mr. Step communicated a list of British Stalk-eyed *Crustacea,* including the new species, with references to all old species described in Bell's *Crustacea.*

November 28th, 1895.—The President in the Chair.

Mr. Chipps, of Barnes, S.W., was elected a Member.

Mr. R. Adkin exhibited a specimen of *Mesogona acetosellæ,* Fb., a species new to Britain. It was taken on October 26th, near Brighton. Mr. Adkin also exhibited a series of *Coremia munitata,* Hb., from Hoy, with series of the same species from Shetland and Paisley and of *C. designata,* Hufn., for comparison, and read notes on the variations exhibited. Messrs. Barrett, Tutt, and Carrington remarked on the habit of the species of flying during the daytime in elevated, exposed and Alpine regions. Mr. H. Moore, a long series of *Ocneria dispar,* L., bred from a Bordeaux female. They were all small, owing to the larvæ having been fed on hawthorn, it was thought. Mr. Carrington, four xanthic specimens of *Epinephele Janira,* L., from Leigh, Essex, taken in the same field in 1890-91. Also he showed typical and lemon coloured forms of *Hesperia lineola,* L., from Shoeburyness. Mr. Clark, a number of large and well-executed Micro-photographs. Mr. Hy. J. Turner, a specimen of the moorland form of *Noctua festiva,* Fb., from Carlisle, *Crambus pinellus,* L., from Box Hill, a very rosy specimen of *Anticlea rubidata,* Fb., bred from Chichester, and a pair of *Coccyx cosmophorana,* Tr., from Carlisle. A long discussion took place on the life-history of this latter species. Mr. McArthur had bred a number from the knobs produced by *Retinia resinella* a year after they had emerged, and said that he found the larvæ in the frass of this species. It was not found at Rannoch, but had been recorded from several localities where *R. resinella* was not known to occur. Mr. Ashdown, a bred specimen of *Acronycta alni,* L., from Richmond, and a specimen of *Eumenes coarctata.* Mr. Briggs, an Orthopteron, *Periplaneta australasiæ,* taken at Kew.

December 12th, 1895.—The President in the Chair.

Mr. Searancke, of Mitcheldean, Gloucester, was elected a Member.

Mr. Barrett exhibited, on behalf of Mr. Brooks, of Rotherham, a long bred series of *Boarmia repandata,* L., including black forms and forms having the dark markings intensified but not extended; a series of the grey form of *Tephrosia biundularia,* Bork., both from Rotherham; and a large number of specimens of *Lepidoptera* collected near Lake Tanganyika from November, 1892, to February, 1893, including two recently named species, viz., *Pseudospiris paidiformis,* Butl., and *Sapæa Trimeni,* Butl. It was noted that several species exhibited occurred in Natal. Mr. Carpenter, *Tæniocampa munda,* Esp., *T. gothica,* L., *T. stabilis,* View., *T. incerta,* Hufn., *T. pulverulenta,* Esp., *Pachnobia rubricosa,* Fb., and red *T. gracilis,* Fb., taken at sallow bloom in his own garden at Streatham. Col. Partridge, a nearly pure white *Cucullia absinthii,* L., bred at Portland. Mr. Barrett, on behalf of Dr. Mason, a number of extreme varieties of *Lepidoptera,* including *Agrotis segetum,* Schiff., uniformly pale and destitute of markings, a unicolorous *A. corticea,* Hb., a dark suffused *Acronycta alni,* L., a unicolorous pale *Noctua augur,* Fb., extreme dark and light forms of *A. lucernea,* L., *A. simulans,* Hufn., *A. agathina,* Dup., and

Ptilophora plumigera, Esp., a pair of *A. subgothica*, Haw., and a very large *Noctua subrosea*, St. Mr. Adkin, specimens of *Hydræcia micacea*, Esp., from West Meath, similar in depth of colour to *H. petasitis*, Dbl., and also a small *Agrotis saucia*, Hb., having purplish-grey primaries and black outlined stigmata. Mr. Tunaley, a var. of *Lycæna Corydon*, Fb., with a wide black border, and another with the black border absent, both from Freshwater; specimens of *Asilus crabroniformis*, L., with *L. Icarus* impaled on their lancets; and a series of *L. Corydon*, Fb., remarkable for the tendency to angularity in the hind-wings, taken at Freshwater; also specimens of *L. bellargus*, Rott., and *L. Icarus*, Rott., showing the same tendency, and contributed notes on the peculiarity. Mr. South, specimens of adipocere of the horse and moth, received from Dr. Knaggs, and read the results of the latter gentleman's experiments. Mr. Winkley, on behalf of Mr. Montgomery, a large number of bred *Colias Edusa*, Fb., and communicated a paper on the subject.—HY. J. TURNER, *Hon. Secretary.*

ENTOMOLOGICAL SOCIETY OF LONDON: *December 4th*, 1895.—Prof. RAPHAEL MELDOLA, F.R.S., President, in the Chair.

Mr. S. H. Scudder, of Cambridge, Mass., U.S.A., was elected an Honorary Fellow to fill the vacancy caused by the death of Prof. C. V. Riley.

Lieut.-Colonel C. T. Bingham, Indian Staff Corps, of 4, Waverley Place, St. John's Wood, N.W.; Captain C. G. Nurse, 13th Bombay Native Infantry, c/o Messrs. Cox and Co., Charing Cross, S.W.; and Mr. E. F. Studd, M.A., B.C.L., of Oxton, Exeter; were elected Fellows of the Society.

The Secretary read a copy of a letter of condolence which he had written, by the direction of the Council, to the Entomological Society of France on the death of their President, Mons. E. L. Ragonot, and he also read the letter in reply from the Secretary of the Entomological Society of France. Mr. R. Adkin exhibited a specimen of *Mesogona acetosellæ*, taken at Arlington, Sussex, in October, 1895. It was stated that this was the first recorded capture of this species in Britain. Mr. G. T. Porritt exhibited an example of *Halesus guttatipennis*, taken at Lye, Worcestershire, in November, 1889. It was believed to be the third British example. Mr. Porritt also exhibited a series of *Mania typica*, showing a curious malformation in all the specimens. He stated that about one-third of a large brood had emerged in exactly the same form, having the wings only half developed, but with the markings clearly defined. Mr. Tutt and Mr. McLachlan referred respectively to similar malformations in *Agrotis tritici* and *Hadena chenopodii*. Mr. Goss read a communication from Mr. Sidney Crompton, of Salamanca, Tenerife, announcing the capture there by Mr. Hammerton of two specimens of *Diadema misippus*, a species of butterfly not previously recorded from Tenerife. Mr. Crompton said the specimens were in such fine condition that they must have been introduced into Tenerife in the larval or pupal state and emerged there. Mr. Hampson, Prof. Meldola, and Mr. Osbert Salvin made some remarks on the distribution of the species. Mr. Champion read a paper, entitled, "On the Heteromerous Coleoptera of St. Vincent, Grenada, and the Grenadines." Mr. Kenneth J. Morton communicated a paper, entitled, "New or Little Known Palæarctic Perlidæ."—H. GOSS and W. W. FOWLER, *Hon. Secretaries.*

ON A NEW SPECIES OF THE GENUS *ARGYRESTHIA*, HB., FROM ENGLAND.

BY EUSTACE R. BANKES, M.A., F.E.S.

ARGYRESTHIA ATMORIELLA, *sp. nov.*

Antennæ fuscous, annulated with whitish. *Palpi*, above and internally pale greyish-ochreous, beneath and externally much clouded with fuscous. *Face* pale ochreous. *Head*, and thickened base of antenna, orange-ochreous, the latter paler internally. *Thorax* and *tegulæ* concolorous with fore-wings. *Fore-wings* somewhat narrow, with rather straight costa and pointed apex, more especially in the females, which average larger than the males; bronzy smoke-grey, very satiny; in favourable lights the costa up to about three-quarters and one or two adjacent veins are seen to be obscurely streaked with bronzy-fuscous; occasionally these streaks appear to form an obscure darker costal vitta, or else are hardly traceable; cilia pale smoke-grey. *Exp. al.*, 11—13 mm. *Hind-wings* satiny slate-grey; cilia very pale grey. *Abdomen* smoke-grey above, paler beneath; anal tuft ochreous. *Legs*: anterior pair fuscous, somewhat paler at the joints; posterior pair and spurs pale greyish-ochreous, tarsi with terminal joints fuscous.

Type: ♂ ♀, Mus. Bnks.

Hab.: ENGLAND—Norfolk, Kent, Surrey; GERMANY—Schönberg, in Prussian Silesia.

Imago: Ve.—VIe.

Considerably larger than *præcocella*, *arceuthina*, *illuminatella*, *glabratella*, and *amiantella*, and conspicuously darker than all these, as well as *certella*, it is most closely allied to, and of about the same size as, *lævigatella*, from which, however, it may be distinguished by its much darker colour, by the ochreous anal tuft, and the fact that the hind-wings are noticeably darker in tone than the fore-wings. One striking variety taken by Mr. Atmore has the fore-wings of a lovely burnished greyish-golden colour.

The first known British individuals of this species, which I have named in compliment to that zealous entomologist, Mr. E. A. Atmore, who has most kindly presented me with some beautiful specimens, were beaten by him out of larch trees near King's Lynn in June, 1893; these were submitted to Lord Walsingham, who, in Ent. Mo. Mag., ser. 2, vol. v, pp. 50—51, indicated that the species would probably prove distinct from *illuminatella*. The insect was again taken amongst larch in the same neighbourhood in June, 1894 and 1895, by Mr. Atmore, who finds it decidedly local but not uncommon; he tells me that he has repeatedly searched for the larvæ in shoots of larch in the spring, but in vain, and I expect they will eventually be found feeding under the bark of the twigs. Among some insects received for identification from Mr. B. A. Bower about a year ago, were four examples of *Atmoriella*, taken by him (three of them on palings) in two localities in N. W. Kent during the first three weeks of June, 1894, and in the Rev. C. R. Digby's collection I detected, last month, a single specimen which he captured near Farnham, in West Surrey, on May 31st, 1895; it is, therefore, rather widely distributed, and will before long doubtless be met with elsewhere, but it seems strange that I have seen no other individuals in British collections.

The matter has been carefully worked out with the help of the Stainton, Zeller, and Frey collections, but my difficulties have been increased by the fact that in the two first-named the sets of some of these allied *Argyresthiæ* contain an unpalatable mixture of two or more distinct species, showing that much confusion exists about them on the continent, and rendering great caution necessary in order to avoid being led into error. In the Zeller series of *illuminatella* are three examples of *Atmoriella* bearing labels which, when explained by a reference to Zeller's correspondence, show that they were taken in June and July, 1880, at Schönberg, in the Ober Lausitz district, in the north-west of Prussian Silesia, and were received in February, 1881, from Herr Otto Torge; when sending them as "*illuminatella*," Torge made the following noticeable remark, "*Arg. illuminatella* flies amongst *Pinus larix* as well as *Pinus picea*." *Atmoriella* should follow *lævigatella* (which is also attached to, and has been bred from, *larch*) in the European, and might precede *arceuthina* in the British, List.

The Rectory, Corfe Castle:
January, 1896.

SOME REMARKS ON THE INSECTS BELONGING TO THE GENUS *PALORUS*, MULS., WITH A DESCRIPTION OF ONE NEW SPECIES.

BY G. C. CHAMPION, F.Z.S.

Several years ago I noticed that two species were confused in British collections under the name of *Palorus* (*Hypophlœus*) *depressus*, Fabr., and that probably neither of them really belonged to it; but as I could not determine them at the time, they were left for future study. The recent publication of Dr. Seidlitz's elaborate work on the *Tenebrionidæ* of Germany, &c. [Naturg. Ins. Deutschl., v (1893—5)], has again brought the subject to my mind, and I am now able to identify our insects, and to make several corrections in the synonymy. Dr. Seidlitz recognizes three European species, two of which, *P. depressus*, Fabr., and *P. Ratzeburgi*, Wissm., are known from Germany and other parts of Europe, and one, *P. bifoveolatus*, Baudi (*nec*

Duftschm.), from southern Europe and Morocco. He appears to have completely overlooked Wollaston's writings on the subject, hence one of the names adopted by him cannot stand. Moreover, the localities given by him for two of the species are rather misleading, as the insects in question are quite cosmopolitan, and carried everywhere by commerce—in grain, flour, ground-nuts, &c.—one of them being often found (like *Tribolium*, &c.) in bread. The following table, based upon a large number of specimens from many localities, shows the differences between the three species now recognized as European :—

Antennary orbits (or sides of the front) moderately prominent, not extending backwards so as to hide the anterior margin of the eyes as seen from above.

The antennary orbits separated from the epistoma (or clypeus) by a distinct furrow ; head (the epistoma excepted) and prothorax coarsely, closely punctate, the punctures on the prothorax becoming very coarse and dense towards the sides ; prothorax much broader than long ; elytra coarsely punctate-striate, with one or more of the inner interstices irregularly biseriate-punctate, and the others uniseriate-punctate.........*depressus*, Fabr. (1790) [= *unicolor*, Oliv. (1790)].

The antennary orbits not separated from the epistoma by a distinct furrow ; head and prothorax more finely and more sparsely punctate, the punctures on the prothorax becoming very little coarser towards the sides ; prothorax considerably broader than long in the male, still broader in the female*; elytra more finely punctate-striate, the interstices uniseriate-punctate throughout, in some specimens transversely wrinkled ; size smaller...
Ratzeburgi, Wissm. (1848) [= *ambiguus*, Woll. (1857) ; *floricola*, Mars.† (1876)].

Antennary orbits (or sides of the front) prominent and more raised, extending backwards so as to hide the anterior margin of the eyes as seen from above, and limited inwards by a deep oblique furrow extending backwards from the transverse frontal groove ; head and prothorax finely and moderately closely punctured, the punctures on the prothorax becoming coarser towards the sides ; prothorax much broader than long ; elytra finely punctate-striate, the punctures closely placed, the interstices uniseriate-punctate, the inner ones in some specimens irregularly biseriate-punctate ; body slightly flattened above...
subdepressus, Woll. (1864) [= *bifoveolatus* (Baudi), (*nec* Duftschm.), (1876), Seidl.].

P. depressus, Fabr.—This species is generally distributed in Europe ; it is found under the bark of various trees, especially oaks. It has, perhaps, not yet acquired a taste for meal. I have examined numerous specimens from Chinon, France (*coll. F. Bates*), Pau

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* Dr. Seidlitz gives the prothorax "as long as broad;" but Wissmann, in comparing his insect with *P. depressus*, makes no mention of this difference, merely stating that the prothorax is more distinctly narrowed towards the base.

† This insect was supposed by Marseul to have been found in a flower, instead of "in flour," hence the name !

(*Fauvel*), Gibraltar, Civita Vecchia, and Salonica (*J. J. Walker*), Morea (*Reitter*), &c. The British specimens hitherto referred to it belong to one or the other of the following species.

P. Ratzeburgi, Wissm.—This is the insect commonly found in granaries, bakehouses, &c., and often met with in bread or flour. Wissman found it under the bark of a dead beech at Münden, Hanover, and it has also been found by others under bark. It is the *P. depressus* of Stephens, all the specimens in his collection belonging to it. I possess examples from London, Scarborough (*Lawson*), Ripon (*E. A. Waterhouse*), &c., as well as from many European localities, Tunis, and Asia Minor. The uniseriate punctuation of the elytral interstices seems to be a constant character of this species. The *P.* (*Hypophlœus*) *depressus* and *P. floricola* of Marseul, from Japan,* belong here. The original specimen of *P. ambiguus*, Woll., was found in the upland region of Madeira, whither, as Wollaston believed, it appears to have been carried (with *Sitophilus oryzæ*) in provisions. I am indebted to Herr E. Reitter for the loan of two specimens of *P. Ratzeburgi*, determined by Dr. Seidlitz.

P. subdepressus, Woll.—Also found in granaries. Apparently less common than the preceding, and easily separable from it by the more dilated, posteriorly prolonged antennary orbits, which are limited inwards by a deep oblique groove, and the fine punctuation of the surface.† In many of the largest and broadest examples (♀), received with others from the same localities, there is an irregular double row of minute punctures on the two or three inner elytral interstices, instead of a single row on each, as in the type; they cannot be separated from *P. subdepressus*. I have seen specimens from London granaries; also from various localities in the south of Europe (Gibraltar, Turkey), Tangier, Syria (*Reitter*), Cape Verde Is., Mexico‡, Texas, Gilbert Is., &c. M. Fauvel, too, has sent me a number of specimens from Rouen, found in a shipment of ground-nuts (*Arachis*). Wollaston's original example from the Canary Is. was found under camel's dung.

The other described species of *Palorus* are:—

P. delicatulus, Reitter (1877), from E. India. The type of this species (or rather the remains of it, for the head and prothorax are broken off) is contained in M. René Oberthür's collection. "Smaller than *P. melinus** (*depressus*), broader, parallel. Head and prothorax more finely punctured; the latter shorter and equally broad throughout, the hind angles more sharply rectangular, the anterior angles more prominent and encroaching on the eyes; elytra shorter, just as broad as the prothorax, almost equal in width throughout, somewhat lighter than the prothorax, more finely punctured in rows, the interstices with very scanty scattered punctures, here and there the punctures forming traces of rows" (*Reitter*). It is doubtful if this species will ever be identified, the form of the head not being mentioned in the description.

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* Ann. Soc. Ent. Fr., 1876, pp. 112, 115.

† These characters are accurately described by Wollaston.

‡ The specimens from northern Mexico referred by me (Biol. Centr.-Am., Col. iv, 1, p. 174) to *P. melinus* belong here.

P. minor, C. O. Waterh. (1894), from Damma Island.—This insect is allied to *P. Ratzeburgi*, but it is much smaller, narrower, and more parallel, thus appearing more elongate, and more finely punctured; the elytral interstices are minutely uniseriate-punctate throughout; the eyes are rather large and coarsely granulated.

The following species, described as *Hypophlœi*, belong to *Palorus*:—

P. euphorbiæ, Woll. (1862), from the Canary Is.—This species differs from all the other members of the genus in its comparatively elongate antennæ; the prothorax is nearly as long as broad; the elytral interstices are uniseriate-punctate. It lives under the bark of dead *Euphorbias*.

P. ficicola, Woll. (1867), from the Cape Verdes.—This species resembles *P. depressus* and *P. Ratzeburgi* in the form of the head; but it is narrower, the antennæ are shorter, the eyes are larger, and the punctuation of the upper surface is much finer. In the sculpture of the head, prothorax, and elytra it is like *P. subdepressus*. The elytral interstices are uniseriate-punctate. Wollaston's specimens were found under the bark of a large native fig-tree.

P. exilis, Mars. (1876), from Japan.—A very small species, closely allied to *P. minor*, but a little less elongate and slightly broader, and with smaller eyes; the prothorax is slightly broader than long, subquadrate; the elytra are parallel, the interstices uniseriate-punctate; the punctuation is fine. In the form of the antennary orbits it agrees with *P. Ratzeburgi* and *P. minor*. There is a specimen from Java in the British Museum apparently belonging to this species.

The following species from Australia and Damma Island, doubtfully referred to *P. depressus* by myself† and Mr. C. O. Waterhouse,‡ is evidently distinct from any of the foregoing, and it is here described:

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* The name *P. melinus*, Herbst, is adopted for this species in the Munich Catalogue; Herbst's figure, however, clearly indicates a true *Hypophlœus*.

† Trans. Ent. Soc. Lond., 1894, p. 370.

‡ Ann. and Mag. Nat. Hist. (6), xiv, p. 66 (1894).

PALORUS AUSTRINUS, *n. sp.*

Moderately elongate, narrow, subparallel, slightly depressed above, rufo-testaceous or rufo-ferruginous, shining. Head closely, finely punctate; the transverse frontal groove deep; the antennary orbits (or sides of the front) feebly reflexed, not prominent, oblique, forming almost a continuous outline with the outer portion of the eyes; the latter rather large, very coarsely granulated, their anterior portion visible from above; the antennæ short. Prothorax transversely quadrate, rounded at the sides in front, the anterior angles not prominent, the hind angles acutely rectangular; thickly, finely punctate, the punctures becoming a little coarser at the sides, the disc with a smooth narrow space along the middle. Elytra moderately long, parallel in their basal half; rather finely punctate-striate, the fifth stria (as usual) more deeply impressed at the base; the interstices minutely uniseriate-punctate, the first (or sutural) interspace more thickly punctate.

Length, $2\frac{1}{5}$—$2\frac{2}{3}$ mm.

Hab.: N. W. AUSTRALIA, Roebuck Bay and Port Darwin; DAMMA ISLAND.

Found in some numbers by Mr. J. J. Walker in each locality; the insect occurred in Australia under bark and away from habitations. In the comparatively large, coarsely granulated eyes this species resembles *P. minor* (also from Damma Island), from which it differs in its much broader shape and larger size. The antennary orbits are much less prominent than in *P. depressus*, &c., and they do not extend backwards (as in *P. subdepressus*) so as to hide the anterior margin of the eye when the insect is viewed from above.

Dr. Seidlitz makes the following remarks respecting *Tenebrio bifoveolatus*, Duftschm. (1812), which is possibly a *Palorus*:—"*T. bifoveolatus*, Duftschm., is not to be referred to our species (*P. Ratzeburgi*) nor to that of Baudi; its occurrence in bread offers no difficulty, for our species also occurs in granaries and bread, but the circumstance that Duftschmid describes the closely allied *P. depressus* as a *Hypophlœus*, and would certainly have put our insect (*P. Ratzeburgi*) close to it."

Horsell, Woking:
December 20*th*, 1895.

CEUTHORRHYNCHIDIUS NIGROTERMINATUS, WOLL.

BY G. C. CHAMPION, F.Z.S.

Mr. C. W. Dale, as a reply to my note on *C. nigroterminatus*, Woll. (= *Crotchi*, Ch. Bris.) (Ent. Mo. Mag. xxxi, p. 194), has forwarded to me for examination a specimen of a *Ceuthorrhynchidius* from Newton Abbot, Devonshire, from Wollaston's British collection labelled by Wollaston himself "*C. nigroterminatus* (= *mixtus*, Muls.)." This example I have carefully compared with the Madeiran types (2) in the British Museum, and my remark that *C. nigroterminatus*, Woll., is "probably distinct from *C. mixtus*, Muls. and Rey," proves to be correct. The Newton Abbot insect agrees perfectly with specimens of *C. mixtus* (one of which was sent me by M. Bedel) from Spain and Algeria in my collection, and it differs as follows from the Madeiran *C. nigroterminatus*:—The lateral tubercles of the thorax are obtuse (instead of acute); the scattered whitish scales on the elytra are much smaller and more evenly distributed (not forming a well-defined patch along the suture behind the scutellum, as in *C. nigroterminatus*); and the tarsi are a little darker, (instead of clear rufo-testaceous, with the exception of the tip of the apical joint). The Newton Abbot specimen has perhaps not been recorded; Crotch, however (Entom. ii, p. 260), mentions two British examples—one found by Wollaston at Gainsborough and one in Dr. Power's collection,—and to judge from his remarks Wollaston seems to have noticed the less tessellate appearance of the elytra in the British insect. Following M. Bedel and myself the two species must be quoted thus:—

1. *nigroterminatus*, Woll.—Madeira.
   Crotchi, Ch. Bris.—Madeira (not England).
2. *mixtus*, Muls. and Rey—England, France, Spain, Algeria.

My note has been criticized by Herr A. Schultze, of Detmold, in the Deutsche ent. Zeitschrift, 1894, p. 434. It is quite evident from his remarks that neither he nor Ch. Brisout had examined Madeiran specimens of *C. nigroterminatus*, and that they have had *C. mixtus* only before them.

Horsell, Woking:
December 7th, 1895.

ON *ALEURODES LONICERÆ*, WALKER.

BY J. W. DOUGLAS, F.E.S.

Aleurodes loniceræ, Walker, List of Homop. Ins. in Brit. Mus., iv, 1092 (1852); Frauenfeld, Verh. z. b. Ges. Wien, 1867, p. 796; Signoret, Ann. Soc. Ent. France, 4e Série, Tome 8, p. 381 (1868).

Head black, yellowish at the sides; eyes brown, divided by a whitish fillet; thorax grey-black, margins pale; antennæ pale brownish; thighs black, the extremities yellowish; tibiæ yellowish, the extremities black; tarsi black; the colours all indefinite or obscured by a thick, mealy covering; wings clear white, the upper ones with *one* grey-black, lunate, nebulous spot at the end of the median nervure, in which is a fine <-shaped black marking on the furcation of the nervure. In some specimens there is also a faint blackish line at the end of the median nervure of the lower wings. Abdomen yellow, the base and apex infuscated.

Expanse of wings, 4 mm.

Larva.—Pale greenish-white, slightly convex, elongate-oval, almost smooth, but the segmentation of the abdomen evident, also there a median row of concolorous round spots; there are also two series of six distant, subdorsal, stout, prominent hairs of various lengths, at different spaces from each other, and two hairs at the anal apex; all these being unicolorous with the dermis are not easy to see, except in profile, but can be well distinguished by varying the focal distance in the microscope. This agrees with Signoret's diagnosis. The margin very narrow. The eye-spots brown, large, conspicuous. Length, 1 mm.

Pupa (not described by Signoret).—When mature, deep golden-yellow, very glossy, true oval, convex, the dorsal area with fine transverse ridges, irregular on the thoracic region; the ordinary anal triangular formation small, short, entire; the margin wide, flat, with regular, raised, transverse striæ; the usual circumferential white waxen fringe wide. The dorsal hairs of the larva have mostly disappeared, but a few of them are persistent in some specimens. Length, 1 mm.

Koch (Aphiden, 327, 4, fig. 396) describes a species which he calls *A. loniceræ*, but Frauenfeld says that, as it has wings entirely white, without any marking, it is not the *loniceræ* of Walker. Signoret, however, cites Koch's species as synonymous with Walker's, observing that it represents a specimen newly developed from the pupa; but there being many species with wings entirely white, I think this assumption is very doubtful.

Walker's description is as follows:—

"On *Lonicera periclymenum*. Yellow. Head and thorax grey. The forewings white, with a dark spot on each. Pupa white, pale yellow beneath and on the disc above. England."

This is very meagre and insufficient. As to the colour of the pupa I infer that it refers to a newly changed example, or even to a larva adult. On the whole my description is not discrepant, allowing for the dense mealy covering of the imago.

Signoret says of the imago:—

"Yellow (jaune). I have always seen on the oldest examples only one spot on the (white) elytra at the end of the median nervure in the same manner as the spots on the abdomen, a large spot on the prothorax and on the metathorax, the base of the abdomen broadly blackish."

This is not exactly the same as in my description, but the difference may, I think, be attributed either to another way of stating the case, or to a variation in individual specimens at various ages, such as is known to exist in other species.

On November 14th and 19th Mr. C. W. Dale sent from Glanvilles

Wootton, Dorset, some leaves of honeysuckle (*Lonicera periclymenum*), to the under-side of which were attached three larvæ, nine fully-grown pupæ, one living imago, and several dead ones of *A. loniceræ*, Walker. Notwithstanding the not material discrepancies above noted, there yet exist sufficient peculiarities to induce me to believe that my determination of the species is correct, and this, considering the previous imperfect English description, was desirable.

This species must be very like *A. rubi*, Sign., which is found in France in great numbers on *Rubus fruticosus* in woods. Signoret, *l. c*, p. 382, says that " the imago has only one black spot on the (white) elytra ; and that the larva also resembles that of *A. loniceræ* in having the same series of long hairs at the same places, but that, on the median line, there is on each abdominal segment a depression which is more visible at the base than at the summit." As, however, I have no examples of *A. rubi* in any stage, I can offer no opinion as to the difference or identity of the two.

153, Lewisham Road, S.E. :
November 26th, 1895.

ASPIDIOTUS PERNICIOSUS, COMSTOCK, AND *AONIDIA FUSCA*, MASKELL: A QUESTION OF IDENTITY OR VARIATION.

BY W. M. MASKELL.

In the " Report of the Entomologist of the United States Department of Agriculture for the year 1880," Professor Comstock described (p. 304) an extremely injurious insect of the Family *Coccidæ*, to which he gave the name *Aspidiotus perniciosus*, or " the pernicious scale ;" and he stated that this insect attacked a very large number of deciduous fruit trees in California, " *excepting peach, apricot and black tartarean cherry*." Later, this pest was observed, described and discussed by many persons interested in horticulture, and in America it is generally known by the trivial name of " the San José scale," and is looked on as a most troublesome thing.

An article in "Insect Life," vol. vi, No. 5, September, 1894, contains much information relative to this insect and its occurrence in various places in America since 1880. Here and there the scale appears to have been found on peach, but only in small quantity ; the principal victims are pear, plum, Japanese plum, apple, currant, &c., and most especially pear. In a subsequent article (" Insect Life," vol. vii, No. 2, p. 165) the same trees are mentioned, with the addition of Japanese quince and elm (American ?). Again, in the same publication (vol. vii, p. 285) the pear is given as the chief victim of this scale.

In the Agricultural Gazette of New South Wales, September, 1892, p. 698, Mr. A. S. Olliff reports *Asp. perniciosus* in Australia on pear.

In September, 1894, I received from Mr. French, of Melbourne, some twigs of peach trees thickly covered with a scale which, in my paper on *Coccidæ* (read November, 1894, published in Transac. New Zealand Institute, vol. xxvii), I identified as belonging to the genus *Aonidia*, and named *Aon. fusca.*

In March, 1895, the same gentleman sent me some apple twigs with many scales, which I found to be *Aspidiotus perniciosus.*

Finally, in July, 1895, Mr. Olliff sent me twigs of pear, peach and apple from New South Wales, much infested by *Aspidiotus perniciosus.* It was while examining these last specimens that the characters which I observed in the adult females led me to compare them closely with those of *Aonidia fusca*; and as a result I cannot help being considerably perplexed.

The opinion which, for many years past, I have persistently advocated as regards the study of *Coccidæ* is, that it is always better to base distinctions, where possible, upon anatomical characters of the insects themselves rather than upon external features of the coverings (waxy or cottony or otherwise) under which they are sheltered. These coverings may vary so much according to accidental circumstances that I think they should be considered as of secondary, or even less importance. In the case of the two insects of which I am now treating, I am sorry to say that I did not adhere strictly enough to my own rule. Size, colour, form of the scale, food plant, and such-like things, have been so greatly insisted upon, as I find, in all the accounts of *Aspidiotus perniciosus*, that I have perhaps attached too much importance to them; and consequently it is possible that my identification of *Aonidia fusca* is erroneous.

All the authors who describe *Asp. perniciosus* give the following characters of it:—

1.—The scale is "grey;" the pellicles "yellow or reddish-yellow," "sometimes black."

2.—When on twigs, "the wood beneath the bark is stained red;" "the cambium layer of wood is stained purplish;" "the peculiar reddening effect on the skin is a very characteristic feature;" "the cambium layer frequently becomes deep red or purplish;" "if the twig be scraped with the finger-nail a yellowish oily liquid will appear."

3.—The diameter of the female puparium, or scale, is given by Comstock as about $\frac{1}{13}$ inch; I do not find it in other writers.

4.—The principal food-plant, as mentioned above, is the pear; when the peach is mentioned it is only incidentally, or as very slightly attacked.

5.—No mention is made by authors of the second female pellicle as being any larger than the adult female.

Now, in all the foregoing characters, the specimens on which I founded my *Aonidia fusca* differ from *Asp. perniciosus*; and if one might accept as positively final the statement in "Insect Life" (vol. vii, p. 289) that "the San José scale differs from all others in the peculiar reddening effect which it produces," then there would be no more to be said, for *Aonidia fusca* produces, so far as I know, no such effect. In size *A. fusca* is much smaller, the female puparium having a diameter of $\frac{1}{35}$ inch. In colour it is "very dark brown or dull black." And again, *A. fusca* is decidedly numerous on peach twigs. Lastly, the second female pellicle is larger than the adult insect.

Judging, therefore, by all the external characters (except that of the second pellicle, of which I find no record) *Aonidia fusca* is different from *Aspidiotus perniciosus*.

But a careful comparison of the adult female insects shows that, with the exception of size, their characters are very similar. My specimens of *Asp. perniciosus* (originally received from Professor Comstock) average $\frac{1}{25}$ inch in length; those of *Aon. fusca* average $\frac{1}{65}$ inch. In colour the two agree; also in the absence of any groups of "spinnerets;" likewise in the terminal lobes, hairs and indentations of the abdomen. The last two characters are of especial importance; so much so that I am strongly inclined to think that I made a mistake in separating the two insects, at least specifically. The identity of my Australian specimens of *Aspid. perniciosus* with those from America is absolute; my Australian *Aonidia* is anatomically very close to both, the principal differences being external.

It remains to discuss the *generic* character of the comparative dimensions of the adult female and the second pellicle; a character which distinguishes *Aonidia* from *Aspidiotus*. I have already remarked that I find no notice on this point in any author as to *A. perniciosus*; but as regards *A. fusca* I have no doubt, and I possess a mounted specimen of an adult with the second pellicle still attached, the difference in size being perfectly clear; the pellicle extends all round beyond the adult. Assuming, therefore, that it may be necessary to unite the two insects, and to make *fusca* a variety of *perniciosus* on the ground of anatomical similarity, ignoring the external differences, it will become a question then of removing *perniciosus* from the genus *Aspidiotus* and of attaching it to the genus *Aonidia*.

It is stated in "Insect Life," vol. vi, p. 362, that while the origin of *A. perniciosus* is uncertain, the probability is that it came to America from Japan. I believe that Mr. Koebele is in Japan at present studying the *Coccidæ* of that country, and he has perhaps discovered the native home of this injurious pest. But, in a letter which I received from him a few months ago he says that the Japanese will not permit any specimens of insects to be sent thence by post; and we must wait till Mr. Koebele himself leaves the country to learn more about this scale. Mr. Benson, of Sydney, however, tells me there have been many fruit trees imported into Australia of late years from Japan.

Wellington, New Zealand :
October 5th, 1895.

TEPHROSIA CREPUSCULARIA.

BY C. A. BRIGGS, F.E.S.

In the August number of the Ent. Mo. Mag., p. 199, Mr. C. G. Barrett speaks of "*Tephrosia crepuscularia* and its paler form *biundularia*." Now apart from the question of specific identity, which I will not raise now, is not Mr. Barrett reviving the error made by Doubleday in the 2nd edition of his Catalogue and transposing the names? For *crepuscularia* is really the *pale* species (or form), and *biundularia* the darker.

The whole difficulty with these names seems to have arisen from Mr. Doubleday's unfortunate 2nd Catalogue, and I have always thought that to the confusion he made in these names we owe much of the doubt that still obtains as to the specific distinction of the two species.

Doubleday, in his first edition (1850), gives these species as—

(I) *Crepuscularia*, W. V., = *biundularia*, Esp., = *consonaria*, Haw., var., = *strigularia*, Steph., var.

(II) *Laricaria*, = *abietaria*, Haworth, non W. V.

Haworth's species (p. 277), 1809, are—

14. *Abietaria*, Hüb., which he tells us occurs at the end of March; and

15. *Crepuscularia*, occurring in July, and easily distinguished by its white wings and smaller size.

Wood's Index gives—

516. *Abietaria*, "Coombe and Birch Woods, March and April." The figure is an unmistakeable *laricaria*, *i. e.*, the earlier yellower species.

517. *Crepuscularia*, "Coombe and Birch Woods, Epping, &c., Middle of May and in June." The figure is equally unmistakeably our light or late species.

Stephens, *Haustellata*, vol. iii, gives—

Abietaria, Haw., March and April.

Crepuscularia, W. V., "smaller and whiter than the preceding," beginning or middle of May or in June.

Westwood, 1845 (I omit *extersaria* and *punctulata*, on which no question arises), gives five species, viz., *tetragonaria*, *crepuscularia*, *consonaria*, *strigularia*, and *abietaria* (this *abietaria* must not be confounded with the species now known as *abietaria*, and then known as *Alcis sericearia*).

In the last edition of Westwood (1860) is a synopsis comparing the names adopted in the work with those of Stephens. From this synopsis, and from the letter from Mr. Doubleday (Ento., vol. i, p. 162), we find that—

A—*crepuscularia* of Westwood's work = *crepuscularia*, Stephens.
B—*consonaria* „ „ = } variety of 2nd brood thereof.
C—*strigularia* „ „ = }
D—*abietaria* „ „ = *laricaria*, Stephens.
E—*tetragonaria* „ „ = *consonaria* of our day.

B, C and E we need not pursue, but of D (*abietaria*) Westwood says, "wings grey and atomose," found in woods in March and April. Syn.: *abietaria*, W. V., Treitschke, Haworth, Stephens, Wood, fig. 516.

But of A (*crepuscularia*) he says, "wings almost white and atomose," found in woods in May, June and July. Syn.: *crepuscularia*, Hüb., Haw., Treitschke, Stephens, Wood, fig. 517; *biundularia*, Esp.; *similaria*, Huf.

So far all is clear, but Doubleday, in his 2nd edition of his Catalogue, gives—

1. *Crepuscularia*, W. V., = *abietaria*, Haw., var., = *laricaria*, Dbl. Cat.
2. *Biundularia*, Esp. (? *præc* var.), = *crepuscularia*, Haw. (var. ver.), = *crepuscularia* var. Gn.

Newman, every sheet and column of whose book passed through Doubleday's hands, of course followed his nomenclature.

Staudinger doubtfully refers Haworth's *abietaria* and Doubleday's *laricaria* to *biundularia*, Bork.

It would seem, therefore, that while there is no doubt that *crepuscularia* is the proper name for the paler later species, there is a little uncertainty whether our larch-frequenting early yellower species should be called *biundularia*, or whether the name *abietaria* should not still prevail. This can only be settled by careful reference to the figures and descriptions in Esper, Borkhausen, Hübner, and Hufnagle, whose works I do not possess. Esper I understand only recognises one species occurring in May and June. Doubleday's error was corrected in Mr. South's list, and it would be a great pity if it were accidentally revived again by so leading an authority as Mr. Barrett.—55, Lincoln's Inn Fields: *August 2nd*, 1895.

[By the kind forbearance of Mr. Briggs I have been allowed to hold over this paper for a time for further investigation of the earlier nomenclature. Unfortunately, circumstances have delayed this far beyond my intention, and even now it is only through the knowledge of entomological literature and kind help of my friend Mr. W. F. Kirby, and the valuable library at South Kensington, that it has been possible to arrive at any definite conclusion.

The earliest existing description which appears to be of the smallest value is that by Borkhausen (1794) of *biundularia*. It is full and accurate, and evidently includes all the forms. He says that the ground colour is a *whitish*-grey, sometimes more, and sometimes less, dusted with brown dots; and going more closely into detail, he clearly describes the common whiter form which is found in June; then adding, "varieties of this are innumerable, and they cannot all be described in words; the ground-colour in many is very white, in still more whitish-grey, in others ashy-grey, and in many brownish-grey; in the last two forms the markings are the least distinct; the markings differ in colour—brown, blackish, rust-colour or reddish. This species is more variable than any other *Geometra* known to me."

Esper's figures of *biundularia*, which he states to be synonymous with *crepuscularia*, W. V., are far less satisfactory. The male has the wing colouring and markings of the pale form pretty accurately, but its antennæ are stout and strongly pectinated—the antennæ in fact of *Boarmia rhomboidaria*—while in the present species the pectinations, though present, are merely rows of minute bristles, and the antennæ are slender and weak. His female figure is one upon which no one I think would like to pronounce. In the text he says that the "ground-colour is very pale ashy-grey, sometimes darkened by thickly sprinkled blackish atoms; the fore-wings have three scolloped transverse lines at even distances, the first edged throughout with a yellowish-brown border, which is sometimes obsolete or very pale; in the middle band, especially in the female, is sometimes a blackish spot accompanied by two white dots, but these are often absent; sometimes the two last bands are connected together by an intermediate transverse stripe. The hind-wings also have three waved black bands, but they are much more slender, and the middle one only bordered with brownish or yellowish, sometimes in the form of a band. Under-side similar but more obscure, and dusted with blackish. Varying in depth of markings and in ground-colour to brown or yellowish. Larva varying much, according to the food plant--brownish-green, brownish-grey, or partly greyish and partly pale green."

De Geer's figure is very little dusted, so probably is intended for the pale form, but that is merely a matter of conjecture. He calls it "the dirty-white moth," and says that it is "dirty-white clouded with grey and with dark lines." De Villers furnished it with a name—*biundularia.*

Hübner's figure 158 is our pale June form. He calls it *crepuscularia.* It is also the *crepuscularia* of the Vienna Catalogue, and *biundularia* is quoted as a synonym; but then the authors say that *crepuscularia* ♂ has *strongly* pectinated antennæ and feeds on *Aquilegia vulgaris!* also that the only question as to the identity of *crepuscularia* and *biundularia* consists in the presence or absence of marginal spots. Since all the forms possess the marginal spots, this does not help us much; but so do the figures, and I am driven to the conclusion that the spots referred to are the pair in the submarginal band, which often are obscured in a brown cloud or hidden by grey or blackish colouring, or even obsolete.

I really think that the only point which emerges at all clearly from all this is, that the authors quoted regarded all the forms as constituting one species, figuring the white forms, describing them and the grey, but comparatively ignoring the brown as a variation: but this is not the point of present contention. Our own authors, Haworth, Stephens, &c., regarded the species as distinct, and they called the more ferruginous or browner form, or species, *abietaria.* When the name *abietaria* was shifted to the species called by them *sericearia*, Mr. Doubleday seems to have adopted *laricaria* for the browner insect. When that was given up he seems very naturally to have adopted *crepuscularia* for it, seeing that *biundularia* was clearly first described as the *whiter* insect. I have followed him, I confess, in my paper, rather as a matter of habit than of serious opinion, since they seem to me to be merely varietal names, but I am now inclined to think *biundularia* the proper name for the whole of the forms—as one species.—C. G. B.].

Habits of Coremia munitata, Hb.—At page 23 *ante*, allusion is made to a habit of this species of flying during the daytime in elevated, exposed, and Alpine regions. I know *C. munitata* very well, and as I have always considered its principal localities here quite exposed enough, it may be worth mentioning that the creature has not yet acquired here any such convenient habit. The species occurs freely over the greater part of this district, and is especially abundant in the higher moorland tracts, say from 600 to 1000 feet, much bleaker and more exposed than many similar or even greater elevations in highland glens where the surrounding still higher hills afford shelter. The time of appearance is usually about the second week in July, and it begins to fly just as it is getting dark. It is one of the few species which seem to defy cold and wet, and I have seen it flying in hundreds along a moorland ditch when it was so damp, raw, and cold, that one's benumbed hands could hardly manage the net. This habit of flight (late at night) and ability to withstand cold are confirmed by Dr. Wocke, who, in recording his experiences in the Dovrefjeld region of Norway, writes (Stett. Ent. Zeit., 25 Jahrgang, p. 171)—"Stets fand ich mitten in kalter Nacht und bei feinem aber dichtem Regen die Geometren *Cæsiata*, *Nobiliaria*, und *Munitata* im lebhaften Fluge." I may also add that I have found *C. munitata* sparingly in June at various elevations amongst the Perthshire mountains, and neither there nor here can I conscientiously say that I have ever seen it fly during the day without being disturbed. Indeed, according to my experience, the species is one of very retiring habits in the daytime, and it is very interesting to me to learn that elsewhere its behaviour is sometimes totally opposite. I should be glad to know more precisely the conditions under which this day-flight takes place.—KENNETH J. MORTON, Carluke, N.B.: *December* 31*st*, 1895.

An early capture in Dorset of Sterrha sacraria, L.—Mr. Bankes' specimen (recorded *supra* p. 19) should be reckoned the third and not the second *S. sacraria* that has been caught in the county of Dorset. The earliest capture happened at Blandford in the autumn of 1863 at the latest. The moth, in prime condition, flew into the schoolroom of Milton Abbas Grammar School one evening, attracted by the lights, and was secured by one of the boys (initials A. E. E.) in the middle of lessons. Recognising the species by the figure on the cover of "The Entomologist's Annual" for 1860, and supposing the specimen to be the third so far obtained in England, he consigned it to the Head Master's museum, where no doubt it is still extant and duly registered. The possessor, the Rev. J. Penny, is now Rector of the neighbouring village of Tarrant Rushton or Rawston, if further chronological precision be desired.—A. E. EATON, Bône, Algeria: *January 7th*, 1896.

Abundance of Lasiocampa rubi.—The North Downs in the neighbourhood of Wye were last autumn literally covered with hordes of the larvæ of *L. rubi*. Most were full grown, some being quite active even at the end of November, crawling about among the grass. The noise made by them feeding of a night was quite astonishing. I did not notice any on the Downs until October, when many were then nearly full grown.—F. V. THEOBALD, Wye Court, near Ashford: *January* 3*rd*, 1896.

Elachista cingillella, H.-S.: a correction.—In Ent. Mo. Mag., Ser. 2, vol. iii, p. 80, Mr. B. A. Bower recorded the capture by himself of an example of *Elachista cingillella* at Lee on August 5th, 1891, adding that the insect had been so identified for him by Mr. Barrett. The moth in question was also exhibited as *cingillella* at a Meeting of the Ent. Soc. Lond. held on December 2nd, 1891. When looking through Mr. Bower's collection about a year ago, I saw this specimen for the first time, and noticing that it differed materially from all the *cingillella* that I had seen borrowed it for further examination. A comparison with Herrich-Schäffer's figure, and with the sets of *cingillella* in the Frey, Stainton and Zeller collections, proved that it could not be that species, and on my recently showing it to Mr. Barrett side by side with continental specimens he agreed that he had been mistaken in its identity. After a careful inspection, I have no hesitation in determining it as a small, faded and rather worn male example of *zonariella.* "Kent" can, therefore, no longer stand as a locality for *E. cingillella,* whose only claim to be considered British rests upon Mr. Stainton's statement (Trans. Ent. Soc. Lond., vol. iv, N. S., p. 312; Ent. Ann., 1859, p. 155) that Mr. Allis possessed a specimen taken in the North of England some years previously to 1859; the more precise locality "near Chesterfield," given in the "Manual," seems clearly to have reference to Mr. Allis' moth. I have had no opportunity as yet of examining this specimen, which presumably is still in the Allis collection at the York Museum, but think that, as the occurrence here of *cingillella* has never been confirmed, the capture (about half a century ago) of a single individual, supposed to represent that species, does not afford sufficient justification for retaining the insect in the British List. We have in Britain several species which are closely allied to it, and very variable, and an example of one of them might easily have been mistaken for *cingillella*, which is hardly likely to have escaped notice if it has so long been established in this country.—Eustace R. Bankes, The Rectory, Corfe Castle: *January 6th*, 1896.

Damage caused in Dorset by larvæ of Hemichroa rufa, Panz.—On September 26th, when out shooting, we came upon a spot, some three miles to the north of Wareham, in Dorset, where was a row of very fine alder bushes about 15 to 20 feet in height, growing on either side of a stream, and for the distance of 150 yards or more almost every single alder bush had been entirely stripped by larvæ which Mr. McLachlan kindly identified for me as those of *Hemichroa rufa*, Panz.; hardly a leaf remained on any of the twigs or branches. The larvæ must have been in truly prodigious numbers to have wrought such havoc, and although the greater part had already fed up and gone, hundreds were wandering up and down the stems in search of food, or making short work of any leaves they could find. The few bushes of ash, birch, &c., which grew among the alders were quite untouched, although *H. rufa* is said to feed on birch as well as alder.—Id.: *December 28th*, 1895.

Abundance of Cetonia aurata in 1895.—I have been informed on good authority that *Cetonia aurata,* the rose beetle, has been of late years much scarcer than formerly in some localities, and has apparently quite disappeared from some gardens which it used to haunt. In our own garden it occurs annually, but is not common as a rule, and in some seasons I do not notice more than two or three specimens; this year, however, proved the exception, for they were extremely abundant at the end of May and in June, and were to be seen by dozens flying round, and sitting on, the apple and lilac blossom in the bright sunshine. Near these special attractions the whole air seemed full of them, and every bunch of lilac bloom, however small, had several tenants. That this beetle was no less abundant in at least one other part of the country is clear from a letter headed "Injurious Insects in 1895," and published in "The Times" of December 24th, in which Miss E. A. Ormerod says, "The beautiful golden chafer, the *Cetonia aurata*, appeared in such vast numbers in one district that the capture of thousands appeared not to lessen the numbers, and much damage was done by the beetles to apple and other blossoms."—Id.

Psammobius cæsus, Panz., in the Scilly Isles.—I took two or three specimens of this species on Tresco, one of the Scilly Isles, in October, 1890. Mr. J. J. Walker named the insect for me. Had I known it was a rarity I might have hunted for more.*—C. W. Dale, Glanvilles Wootton, Dorset: *December 20th*, 1895.

Exotic Coccids in England.—Parlatoria Pergandii, Comstock: some dark specks on the rind of an orange bought in a village shop proved upon examination to be scales of the above species. They covered living females and eggs; the former of a dull purplish colour. I notice that the ventral part of the scale is well developed, and completely encloses the insect. *Asterolecanium bambusæ*, Boisd.: in the palm house at Kew I find a species of *Asterolecanium* plentiful upon the stems and leaves of several kinds of bamboo. It appears to be identical with *A. bambusæ* of Boisduval.—E. E. Green, Bearsted, Kent: *December*, 1895.

Nothochrysa capitata at Huddersfield.—Mr. S. L. Mosley of this town has just given me a specimen of *Nothochrysa capitata* taken during the past season at Newsome, Huddersfield. The species has not hitherto been recorded so far west in Yorkshire, but I have taken it in several widely separated woods further east in the county.—Geo. T. Porritt, Crosland Hall, Huddersfield: *January 10th*, 1896.

Abundance of Halesus guttatipennis in North Yorkshire.—Several weeks ago my friend Mr. G. C. Dennis, of York, wrote me that when fishing at Pickering on November 9th last, he noticed a Trichopteron in immense profusion on the bushes along the water side, and that he had boxed a few specimens for me to see. These specimens (14 in number) he brought here a few days ago, and my pleasure may be imagined when I saw they were *Halesus guttatipennis*, a species hitherto so rare that only three British examples had been recorded, and all of them taken singly. Mr. Dennis says that on the day he saw them he could easily have taken a thousand. —Id.

[The species of the genus *Halesus* are often of local distribution, but, as a rule, occurring in profusion in their special habitats; they are mostly strictly autumnal.

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* I also have seen one of the specimens, and there can be no doubt as to the determination. —G. C. C.

It seemed incomprehensible that *H. guttatipennis* should only occur singly with us. The secret is now out. It has not been looked for late enough. In Belgium it is recorded on the strength of a single specimen taken by Baron de Selys-Longchamps at Halloy, one of the family estates, on October 15th. I visited the precise locality in September, and now quite comprehend why it was not to be seen, and think the middle of October example was probably a precocious individual.—R. McLachlan].

Raphidia Ratzeburgi, Br., on the Simplon.—When staying at Berisal on the Simplon (over 5000 feet) last summer, the Rev. F. D. Morice captured an immature ♀ example of *R. Ratzeburgi*, a species which, although not new for Switzerland, is probably new for the district, and of sufficient rarity generally to merit notice. The only other species seen was *R. notata*, F.—R. McLachlan, Lewisham, London: *January 4th*, 1896.

The mildness of the season.—This year has commenced with the thermometer out of doors during the daytime above 50 degrees, and the atmosphere damp, with occasional gleams of bright sunshine, which has made great stir among the hive bees, much to the regret of the bee keepers, who well know that feeding will have to be resorted to if the tenants of the hive are to be kept alive through the remainder of the winter. A young friend on Sunday last (December 29th) in endeavouring to make a more intimate acquaintance with one, got stung in the hand. On January 1st I saw a full grown larva of *Pieris rapæ* crawling up the garden door, evidently bent on pupating a little higher up, and on the 2nd, the thermometer standing at 56, the hive bees were very active, flying about in search of flowers, which were very scanty at present; we have violets, primroses and anemones, and these are about all. In the afternoon, between 2 and 3 o'clock, I heard the unmistakable buzz of a queen wasp, and looking up, I saw her working her way along the wall trees as nimbly as in the late spring, and gave her chase and succeeded in capturing her (*Vespa britannica*); this is generally the earliest wasp on the wing, but I never before heard of one at so early a date, so think it worth recording.—V. R. Perkins, Wotton-under-Edge: *January 3rd*, 1896.

Societies.

Birmingham Entomological Society: *November 19th*, 1895.—Mr. P. W. Abbott, Vice-President, in the Chair.

The Chairman appealed to the Members for material, specimens, &c., to commence a local collection of *Lepidoptera* it was proposed to start in connection with the Society, for which a cabinet had been given by Mr. G. H. Kenrick. He asked chiefly for local species, of which good series were wanted, and requested for them to be carefully labelled.

Mr. R. C. Bradley showed seashore *Muscidæ*—*Actora æstuum*, Barmouth, *Orygma luctuosum*, Barmouth, *Cœlopa eximia*, Nevin, S. of Portland, and *C. pilipes*, Barmouth; he called attention to the flat shape of the *Cœlopæ*, and explained that they lived amongst the stones on the beach, and dodged under them when sought for, so as to make it difficult to obtain them. Mr. P. W. Abbott, a pair of *Sphinx pinastri* from Sussex, where he said it had been taken in some numbers recently. Mr. A. H. Martineau, a specimen of *Sphinx convolvuli* from Solihull. Mr. W. Harrison, a series of *Erebia blandina* from Witherslade Moss, and *Macroglossa fuciformis* from the New Forest; also larvæ of *Liparis auriflua* in the small white cocoons in which they undergo hibernation, found under the bark of a willow in Hanbury Park. Mr. J. W. Smallwood, a number of *Lepidoptera* taken at Willington in South Derbyshire, including *Acronycta alni*, *Cosmia affinis*, *Cirrhœdia xerampelina*, *Eupithecia valerianata*, *Anticlea rubidata*, and *Trichiura cratægi*. Mr. C. J. Wainwright, *Asteroscopus sphinx* from Hanbury Park, and a fine dark specimen of *Hibernia defoliaria* from the same place, with an olive shade on its wings. Mr. R. W. Fitzgerald, a number of insects collected by him at Dursley, near Gloucester, on the south-west slopes of the Cotswolds, including amongst others *Xanthia aurago* (common, but worn when taken), a series of *Xylocampa lithorhiza* from sugar, a long and varied series of *Scopelosoma satellitia*, *Orthosia macilenta*, *Himera pennaria* (one from a dug pupa), and a specimen of *Camptogramma bilineata*, the black markings of which had increased so as to form a well defined band on each wing. Mr. Wainwright, a list of captures made by Mr. C. A. E. Rodgers at Malvern Wells, and remarked upon a resemblance between that insect fauna and that of Dursley on the opposite side of the Severn Valley; amongst other insects taken on both sides being *Procris Geryon*, *Xanthia aurago*, *Orthosia macilenta*, &c.; both Mr. Rodgers and Mr. Fitzgerald had taken *O. macilenta* commonly on the hills and no *O. lota*, while Mr. Rodgers said that on the plains below Malvern the Rev. E. C. Dobrée Fox got *O. lota* commonly and no *O. malicenta*; Mr. R. W. Fitzgerald, however, said that he had seen larvæ of *O. lota* on the hills.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: SIXTY-THIRD ANNUAL MEETING, *January 15th*, 1896.—Prof. RAPHAEL MELDOLA, F.R.S., President, in the Chair.

After the Balance Sheet had been read by Mr. A. H. Jones, one of the Auditors, Mr. Goss read the Report of the Council. It was announced that the following gentlemen had been elected as Officers and Council for 1896:—President, Prof. R. Meldola, F.R.S.; Treasurer, Mr. Robert McLachlan, F.R.S.; Secretaries, Mr. Herbert Goss and the Rev. Canon Fowler, M.A.; Librarian, Mr. Geo. C. Champion; and as other Members of the Council, Mr. W. F. H. Blandford, M.A.; Mr. G. F. Hampson, B.A.; Prof. Edwd. B. Poulton, M.A., F.R.S.; Mr. Osbert Salvin, M.A., F.R.S.; Dr. D. Sharp, M.A., F.R.S.; Mr. Roland Trimen, F.R.S.; The Lord Walsingham, LL.D., F.R.S.; and Colonel J. W. Yerbury, R.A. It was announced that the President would appoint Dr. D. Sharp, Mr. Roland Trimen, and Mr. W. F. H. Blandford Vice-Presidents for the Session 1896—1897. Prof. Meldola then delivered an address. A vote of thanks to the Officers having been proposed, seconded, and carried, Prof. Meldola and Mr. McLachlan replied, and the proceedings terminated.—H. GOSS, *Hon. Secretary*.

HINTS ON COLLECTING MYRMECOPHILOUS *COLEOPTERA*.

BY HORACE ST. JOHN DONISTHORPE, F.E.S.

Many entomologists having asked me, personally and by letter, "How do you find the beetles in ants' nests?," I thought a paper on this subject might be useful, and also interesting to your readers, as probably some collectors have not seen the late E. W. Janson's "Observations on the Myrmecophilous *Coleoptera*, or Ants'-nest Beetles of Britain" (Ent. Ann., 1857, pp. 85—96; and 1858, pp. 78—84), or any of the various other scattered records on these insects.

I have tried to describe as clearly as possible the methods I have found most effective, and which with me have proved very successful, as in a short space of time I have succeeded in taking over two-thirds of our Myrmecophilous *Coleoptera*.

Patience and perseverance, with a determination not to be discouraged by frequent failures, are necessary, as it often happens that the day and situation you select as most propitious prove the contrary, and you return home without a single specimen.

The best times of the year for working ants' nests are the spring and autumn, and always in the morning, as when the sun has been shining for some hours the beetles appear to seek the interior of the nest.

The implements required for working ants' nests are a medium-sized linen bag, a newspaper, and a bark ripper; a sieve, sweeping net, and umbrella are also necessary at times. The two first mentioned are indispensable, in fact, little can be done without them.

The three best species of ants to work, and the ones with which the most beetles are found, are *Formica rufa*, *fuliginosa*, and *flava*, though beetles are to be found in company with other ants, such as *Formica nigra*, *fusca*, and *sanguinea*, *Myrmica ruginodis*, *lævinodis*, and *scabrinodis*, and *Tapinoma erratica*.

In this paper seventy species of Myrmecophilous *Coleoptera* will be found to be mentioned, which I believe embraces the whole number at present known as British.

Formica rufa.—As is well known, this ant makes large hillocks in woods and on heaths near pine trees, composed of pine needles, bits of stick, and small fragments of any material handy. Several nests are generally found together, and having selected a locality which is convenient to work, the nests should be prepared by placing two or three bricks, or large rough stones on the sloping sides of each, and a log or clump of old wood on the top. This should be done about the beginning of March, the ants may then be seen massing on the hillocks in the sunshine; afterwards the nests should be visited once or twice a week, and carefully examined in the following manner:—

On approaching the nest the stones or bricks should be lifted quickly in turn and placed in the bag described above, and the spot where they rested well searched; then the stones must be thoroughly overhauled and replaced in their original position. It will be observed that the ants make galleries leading up beneath the stone, and many beetles will be found at the entrance of these galleries, or on the under-side of the stone. Next, the clump of wood should be quickly raised, and smartly rapped over the newspaper to shake off all the *débris* with which it is covered, and such *débris* should be shot into the bag; it can then be sifted in small quantities on the newspaper. I have always found this to be the best plan, as it is easier to see the smaller insects when there is not much rubbish on the paper. I once took ten specimens of *Dinarda Mærkeli* in the *débris* from a single clump of wood placed on a hillock.

It is also a good plan to make a small hole in the side of the hillock and place in it a bunch of grass twisted together; this, when next examined, should be taken bodily out and placed in the bag, it can then be sifted over the newspaper in the same manner as the *débris*.

The paths or "runs" used by the ants on leaving or returning to the nest should be closely inspected, and all stones, bits of rubbish, and dead leaves sifted over paper. All herbage near the nest must be swept with a sweeping net and the roots examined. When any moss grows near it should be pulled up and sifted over the paper.

The nests are often situated at the base of a small pine or other tree, and in this case the branches may be beaten over an umbrella.

Other species of *Coleoptera* besides ants'-nest beetles can be taken by watching the ants returning home laden with insects, many of which prove to be beetles. I once took a dead specimen of *Cleonus nebulosus*, which several ants were dragging towards their nest.

The following is a list of the species found with *Formica rufa*:—*Aleochara ruficornis*, Gr.; *Oxypoda formiceticola*, Märk., *recondita*, Kr., and *hæmorrhoa*, Sahlb.; *Thiasophila angulata*, Er.; *Dinarda Mærkeli*, Kies.; *Atemeles emarginatus*, Pk.; *Myrmedonia humeralis*, Gr.; *Notothecta flavipes*, Gr., and *anceps*, Er.; *Homalota parallela*, Mann.; *Quedius brevis*, Er.; *Staphylinus latebricola*, Gr.; *Xantholinus atratus*, Heer; *Leptacinus formicetorum*, Märk.; *Scydmænus pusillus*, Müll., and *Godarti*, Latr.; *Batrisus venustus*, Reiche; *Eutheia plicata*, Gyll.; *Ptilium myrmecophilum*, All.; *Ptenidium formicetorum*, Kr.; *Coccinella distincta*, Fald.; *Dendrophilus pygmæus*, L., and *punctatus*, Herbst; *Myrmetes piceus*, Payk.; *Monotoma conicicollis*, Aubé, and *formicetorum*, Th.; *Prionocyphon serricornis*, Müll.; *Clythra quadripunctata*, L.; *Cetonia floricola*, Herbst.

It is perhaps worth while to mention the habits of a few of these species.

Aleochara ruficornis, a rare species, is taken in moss, and by sweeping near the nest.

Dinarda Mærkeli is almost always found by means of the clump of wood described above. I have taken it in the spring and also in the autumn.

Atemeles emarginatus I have taken by beating shrubs round the nest; it is also found in company with *Formica fusca*, *Myrmica scabrinodis*, *lævinodis*, and *ruginodis*. At Guestling, near Hastings, last spring I took twelve specimens out of a very small stump infested by the second of these ants.

Myrmedonia humeralis I have only found by sifting dead leaves near the nest.

Quedius brevis, six of which species I once took in a bunch of grass buried in the side of the hillock.

Dendrophilus punctatus, I have taken this insect at Weybridge with *Formica rufa*; it is also recorded as having been found with *F. fuliginosa*.

Coccinella distincta is found under leaves and crawling over the hillocks.

Monotoma conicicollis and *formicetorum* are to be taken by beating the clump of wood; it is said they are only to be found in the autumn, but I have taken both species in the spring.

Clythra quadripunctata I have taken on small shrubs, and also flying near the nests. The larva of this insect lives in the interior of the nest, as is also the case with the next mentioned species.

Cetonia floricola: I am told that in the north, where this insect occurs, the method usually adopted is to dig the pupæ up from the interior of the nest and breed the perfect insect.

FORMICA FULIGINOSA.—The home of this ant, a black shining insect with pale yellow tarsi, is in a tree, generally oak or beech, which is often dead.

The ants may be seen leaving and returning to their nest in thin long lines, always using the same "runs" or tracks, which extend to considerable distances from the starting point, and it is not always easy when you meet with one of these "runs" to discover where the tree is whence the ants come.

The tree having been found, the ants will be observed to enter the nest by a hole or holes at the roots or in the trunk; all such cavities should be "packed" or filled with grass, and should the tree be hollow, a large bunch of grass twisted together so that it can be moved bodily, may be placed in the hollow, or a piece of old damp wood loosely wrapped in paper, or an old bone, are also good when treated in the same way.

One of the disappointments when working this ant is frequently caused in the following manner:—The tree is often situated by the road-side, and when you visit it again in expectation of reaping a rich harvest from the traps you have so carefully prepared on the previous occasion, you find all the grass and other materials pulled out, and in their places burnt paper, matches, or stones.

However, all being as it should, the grass and other articles must be carefully drawn out and shaken over a newspaper, all chinks and crevices in the tree examined, and all loose bark ripped off; under a large piece of loose bark on a tree infested by this ant, I once took thirteen specimens of the pretty little *Amphotis marginata*, which is almost always found in such situations.

The "runs" of the ants should be followed and diligently searched, and all stones, refuse, dead leaves, and other rubbish turned over and sifted over paper; the roots of grass should be examined, and any moss growing near pulled up and shaken over paper. I have found it a good plan if one of the "runs" leads through a lot of dead leaves, as is often the case, to shake them in a small sieve over a newspaper.

Turning back the grass at the roots of the tree, and digging up the earth along the same will generally repay any trouble and time expended. It is said to be a good plan to sift the moist sawdust and frass ejected from the tree by the ants, but in all trees in which I have found this ant I have never seen any such sawdust.

The following are the beetles found with *Formica fuliginosa*:—*Ilyobates glabriventris*, Rye (*Bonnairei*, Fauv.); *Myrmedonia funesta*, Gr., *humeralis*, Gr., *lugens*, Gr., *laticollis*, Märk., and *Haworthi*, Steph.; *Homœusa acuminata*, Märk.; *Microglossa palla*, Gyll., and *gentilis*, Märk.; *Oxypoda vittata*, Märk.; *Thiasophila inquilina*, Märk.; *Notothecta confusa*, Märk.; *Homalota nitidula*, Kr., *oblongiuscula*, Sharp, and *exarata*, Sharp; *Euryusa laticollis*, Heer; *Oligota pusillima*, Grav., and *atomaria*, Er.; *Quedius brevis*, Er.; *Othius myrmecophilus*, Kies.; *Xantholinus glaber*, Nordm.; *Heterothops quadripunctula*, Gr.; *Leptinus testaceus*, Müll.; *Ptenidium formicetorum*, Kr., and *Gressneri*, Er.; *Dendrophilus punctatus*, Herbst; *Abræus globosus*, Hoff.; *Amphotis marginata*, F.; *Cænoscelis pallida*, Woll.; *Batrisus venustus*, Reiche; *Scydmænus pusillus*, Müll.

All the species of *Myrmedonia* have a habit of rolling themselves up, when alarmed, and remaining quite motionless for a considerable time; a sharp look out must be kept, as they are easily passed over on this account. The hind body of these insects when mounted has an unpleasant knack of curling up in drying, this can be prevented by allowing the insects to soak in water for a short time before they are placed on the card. Care should be taken not to bruise or crush them, as the moisture which exudes from their bodies stains the card violet.

Myrmedonia humeralis and *Quedius brevis* I have taken sparingly with this ant, both species being generally found with *Formica rufa*.

Amphotis marginata, as before said, is generally taken under loose bark,* but I once took it by sifting dead leaves in one of the "runs."

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* It may sometimes be induced to emerge from the chinks of the bark by the application of a little tobacco-smoke.—G. C. C.

Leptinus testaceus, a small yellow insect, which runs very fast, is sometimes found with this ant; it also occurs in humble-bee's nests, and the nests of small rodents.

Scydmænus pusillus I took on one occasion in company with this ant; heretofore it has only been recorded as associating with *Formica rufa*.

Formica flava.—The nest of this ant is either in a mound of earth or situated under a stone, generally a flint. In the first case very little can be done; I have tried cutting away a small portion of the mound and placing a brick in the cavity thus made, but I have only on one occasion taken anything in this kind of nest, that being a specimen of *Staphylinus stercorarius*.

When the nest is constructed under a stone, the stone should be quickly but carefully raised (so as not to cause the sides of the chambers, which will be discovered under it, to fall in), and placed in the bag; then kneeling down, the chambers and galleries should be minutely scrutinized, when beetles will often be seen in them; the ants meanwhile should be closely watched, as they often seize and carry down the beetles into the nest in the same manner as they do their own pupæ and larvæ. Next, the under-side of the stone should be inspected, as beetles are frequently to be found careering on it. The stone must always be put back into the exact position it held before, this being done the nest can be examined again and again without injury to the ants.

The following species occur with this ant:—*Myrmedonia limbata*, Pk.; *Othius myrmecophilus*, Kies.; *Astilbus canaliculatus*, F.; *Staphylinus stercorarius*, Ol.; *Claviger foveolatus*, Müll.; *Hetærius ferrugineus*, Ol.; *Trichonyx Mærkeli*, Aubé.

Claviger foveolatus is, as a rule, found singly, but I have taken two, three, and even five specimens in one nest,* and though it generally occurs with this ant, I have found it with *Formica nigra* also, and may add that I have taken it in May, June, July, and August.

Hetærius ferrugineus I have been unable to find as yet, though I have diligently searched for it. It is found with *Formica flava, fusca*, and *sanguinea*.

Of the other ants with which beetles occur—

Formica fusca is found either under stones or in old posts and stumps; in the former case they should be treated in the same manner as *Formica flava*, and in the latter the stump should be broken up over paper.

Aleochara ruficornis, Gr.; *Homœusa acuminata*, Märk.; *Dinarda dentata*, Gr.; *Atemeles emarginatus*, Pk., and *paradoxus*, Gr.; *Myrmedonia limbata*, Pk.; *Euryusa laticollis*, Heer; *Ptenidium Kraatzi*, Matth.; and *Hetærius ferrugineus*, Ol., are found with this ant.

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* It has been taken in abundance in one nest by Mr. J. J. Walker, as well as by myself and other collectors.—G. C. C.

FORMICA NIGRA has similar habits to the preceding.

The following species are found:—*Othius myrmecophilus*, Kies.; *Astilbus canaliculatus*, F.; and *Claviger foveolatus*, Müll.

FORMICA SANGUINEA makes a nest somewhat in the same manner as *Formica rufa.*

With it are found *Dinarda dentata* and *Hetærius ferrugineus.*

With MYRMICA SCABRINODIS, RUGINODIS, and LÆVINODIS found in old stumps and under stones, *Atemeles emarginatus* occurs, and with the last-named ant the other species, *paradoxus*, has been taken. *Lamprinus saginatus*, Gr., is also said to occur with these ants.

The very rare *Myrmedonia plicata* occurs with the rare ant, TAPINOMA ERRATICA, which I believe is only to be found at Bournemouth.*

The very rare *Bythinus glabratus* is recorded in the Rev. Canon Fowler's "*Coleoptera* of the British Islands" as having been taken with a small yellow *Myrmica* in company with *Trichonyx Mærkeli. Trichonyx sulcicollis* is also found with ants.

It will be noticed that many species of *Coleoptera*, other than those of true Myrmecophilous habits, are found in company with ants, such as *Homalota analis*, Gr., *Xantholinus linearis*, Ol., and *Exomias brunnipes*, Ol., which are always turning up.

I cannot understand how it is that the ants tolerate their presence, as I have frequently tried the experiment of introducing other species into a nest, and they have invariably been attacked and dragged down into the interior, even such large species as *Ocypus olens*, *Creophilus maxillosus*, or *Pterostichus striola.*

In conclusion, I hope this paper may prove of use to some of my fellow workers.

The following is a list of the localities where I have worked for ants'-nest beetles:—Sevenoaks, Weybridge, Tilgate Forest, New Forest, Parkhurst Forest, I. of W., Blackgang, I. of W.; Hastings district: Bexhill, St. Helen's Wood, Guestling Wood.

In connection with the foregoing notes, I have consulted the following writers on the subject:—

COLLETT, E. P.—Myrmecophilous *Coleoptera* in the Hastings district. Ent. Mo. Mag., xx, p. 40 (1883).

CROWTHER, H.—*Clivina fossor* myrmecophilous. Ent. Mo. Mag., xv, p. 19 (1878).

DOUGLAS, J. W.—Ants' Nest Beetles. Ent. W. Intell., iv, pp. 15, 16, 27, 28 (1858).

JANSON, E. W.—Observations on the Myrmecophilous or Ants' Nest Beetles of Britain. Ent. Ann., 1857, pp. 85—96.

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* *Tapinoma erratica* occurs on the Surrey Commons—Woking, Chobham, &c., and also at Crohamhurst, and Addington, near Croydon.—E. S.

Janson, E. W.—Notes on Ants' Nest Beetles. *l. c.*, 1858, pp. 78 - 84.

——— *Myrmedonia plicata* at Bournemouth. Trans. Ent. Soc. Lond., (3) ii, proc., p. 125 (1866).

Lloyd, R. W.—Note on *Cetonia floricola*, Herbst. Ent. Mo. Mag. (2), iii, p. 310 (1892).

Lubbock, Sir J.—Ants, Bees and Wasps (1882).

Power, J. A.—Notes on Myrmecophilous *Coleoptera*. Report of the British Association for the Advancement of Science, 1858, pp. 129, 130 (1859).

Saunders, E.—*Coleoptera* from the vicinity of Ants' Nests, Chobham. Ent. Mo. Mag., xx, pp. 18, 19 (1883).

Scott, J.—Ants' Nests and their inhabitants. Zoologist, xviii, pp. 7024-7026 (1860).

Smith, F.—Notes on the capture of *Claviger foveolatus* and other Coleopterous Insects in Ants' Nests. Zoologist, i, pp. 266-269 (1843).

Wasmann, E. — Kritisches Verzeichniss der myrmekophilen und termitophilen Arthropoden (1894).

White, F. Buchanan.—The nest of *Formica rufa* and its inhabitants. Scott. Nat., i, pp. 216-222, 258-263 (1872).

White, W. Farren.—Ants and their ways (1883).

Wilkinson, T.—Ants' Nest Beetles at Scarborough. Ent. Mo. Mag., ii, p. 14 (1865).

West Cromwell Road,
South Kensington :
October 1895.

QUEDII IN THE NESTS OF *BOMBUS* AND *VESPA*.

BY G. C. CHAMPION, F.Z S.

Mr. E. A. Butler has recently sent me four *Quedii* for examination, all taken by Mr. W. H. Tuck at various times near Bury St. Edmunds. Two of these, found in October, 1895, in a nest of *Bombus terrestris*, belong to *Q. fulgidus*, F. The third, found in September, 1893, in a nest of *Vespa germanica*, is apparently a discoloured *Q. puncticollis*, Thoms. The fourth, and most interesting, found in a nest of *Bombus hortorum* (*subterraneus*), agrees well with the description of *Q. nigrocæruleus*, Muls. and Rey, which in the last edition of v. Heyden, Reitter, and Weise's Catalogue is placed as a variety of *Q. fulgidus*, F. This form has not, I believe, been previously recorded from Britain. Mr. Butler's specimen is a well developed male. In Mulsant and Rey's work (Staphyliniens, pp. 502, 503 [1877]) *Q. nigrocæruleus* is placed next *Q. mesomelinus*, Marsh., and they give the following characters to separate it from that species :—" Of the size of the largest examples of *Q. mesomelinus*, proportionately a little broader, and of a deeper colour in all its parts; the antennæ slightly stouter; the head larger and more distinctly punctured, with two punctures (instead of one) towards the postero-interior border of the eyes; the prothorax with from 2—4 punctures in an arched series upon the sides of the disc, with the lateral pore a little less distant from the margin; the elytra more densely punctured, and with a slight bluish reflection, violaceous in immature examples; the abdomen less iridescent, &c." The larva is also described by them; it is stated to live in caves with the perfect insect. In the puncturing of the sides of the disc of the thorax the insect is more nearly allied to *Q. fulgidus*, which in its typical form has the elytra red. Amongst my long series of *Q. mesomelinus* not one shows any trace of blue coloration on the elytra, this being very distinct in Mr. Butler's specimen.

Horsell, Woking:
February 8th, 1896.

DIPTERA MET WITH IN 1895, CHIEFLY IN THE MIDLANDS.

BY RALPH C. BRADLEY.

In the Midlands, 1895 will certainly be remembered as a year for *Syrphi*. Early in May they were extremely abundant, occurring in thousands in the blooms of *Caltha palustris* in Blackroot Bog, Sutton Park, three or four in each flower, the species were chiefly *venustus*, *tricinctus*, *ribesii*, *nitidicollis*, *punctulatus*, *annulatus*, *cinctellus*, *bifasciatus*, and *arcticus*, Zett. After paying several visits I found that it was possible to recognise some closely allied species yards away by their different styles of holding their wings when they settled in the blooms.

On May 11th, in company with my friend Mr. Martineau, I paid a visit to Trench Woods. On a hill-side facing the setting sun great numbers of *Syrphi* were found between 4.30 and 6 o'clock; they were not occupied in the usual manner, imbibing sweets, but were basking on leaves, enjoying the great heat and perfect weather. Never have I seen *Syrphi* out in such numbers so late in the evening: *S. bifasciatus* and *nitidicollis* were the most numerous; the prizes being two specimens of *decorus*.

Criorrhina asilica was common the following day at apple bloom, but very difficult to capture on account of the strong wind. A feature of this trip was the extraordinary number of *Tipula vernalis*, they were a positive nuisance, dozens rising up at every step, many of them coupled.

In a lane about a mile from the wood I was delighted to meet with, for the first time, a fine specimen of the rare *Xanthogramma citrofasciatum.*

On June 2nd the new shoots of pine and fir trees in Sutton Park were very attractive to all kinds of insects: bees, wasps, beetles, ichneumons, and even "daddies" were crawling over them, flowers being almost deserted. The principal *Diptera* taken were *Syrphus tricinctus*, *quadrimaculatus*, *Chrysotoxum arcuatum*, and *Erigone vagans.*

Of other captures the following may be noticed :—

Syrphus grossulariæ.—One taken in my garden, June 9th ; *S. guttatus*, one ♀ in Sutton Park, June 16th, and another at Barmouth, August 20th ; *S. nitens*, Zett.—A ♂ from Wyre, April 14th, and a ♀ from Barmouth, August 23rd, represent this little known species ; *S. compositarum* and *umbellatarum* also from Barmouth.

Helophilus frutetorum and *lineatus.*—Very common in Sutton Park during June and July, *lineatus* being so abundant at times that half a dozen could be taken at one stroke. *H. transfugus.*—I was delighted to meet with this rare species for the first time this July in Sutton Park, about twenty were taken, mostly males.

Xylota nemorum.—One ♀ from Cannock Chase, this being also new to me.

Didea alneti.—At Trench Woods, May 26th, I missed a specimen of the yellow form, and on May 15th saw the pale green form at Sutton, which was also missed, but on August 1st, within a few yards of the same spot, I captured a grand pale green ♀. All the *Dideæ* I have seen and captured (a dozen) either occurred in May or August and September. This suggests that they may be double-brooded.

Pipunculus sylvaticus.—Common at Barmouth, also one *flavipes*, same locality.

Eristalis sepulchralis and *Arctophila mussitans.* — Both from Sutton.

Beris fuscipes, *chalybeata*, and *vallata.*—These occurred in my garden on *Rhododendron* leaves, the first named commonly.

Among *Cordyluridæ*, *C. ciliata*, *geniculata*, *C. apicalis*, *Hydromyza Falleni*, *Scatophaga scybalaria*, *Tetanocera reticulata*, were not uncommon in Sutton Park, also *Loxocera aristata*, which was very abundant on a small-leaved holly bush, May 11th, over forty taken.

Echinomyia grossa.—One in Sutton Park ; this is, I believe, a second for the Midlands.

Limnia marginata, *Sphecolyma inanis*, *Mycophaga fungorum*, *Acidia lychnidis*, all occurred in my garden.

Tipulidæ were well represented: *Tipula gigantea*, *lunata*, *varipennis*, *Dolichopeza sylvicola*, *Limnophila ferruginea*, *Cylindrotoma distinctissima*, *Ephelia marmorata* and *submarmorata*, *Pachyrrhina crocata*, *maculosa*, and *annulicornis*, *Lipsothrix errans*, all met with in a two days' visit to Cannock Chase.

Dicranomyia sericata and *nigropunctata* from Trench Woods.

Tipula vittata (common), *scurra*, *plumbea*, *Pachyrrhina imperialis*, and many others from Sutton Park.

These rough notes, although not including half the species that were captured, prove, I think, that 1895 was a good season for *Diptera*.

Holly Bank, Sutton Coldfield:
February, 1896.

NOTES ON *EREBIA GLACIALIS*, ESP. (*ALECTO*, HB.), AND *E. MELAS*, HERBST.

BY DR. O. STAUDINGER.

In the January number of this Magazine Mons. C. Oberthür published some notes on *Erebia melas*. Monsieur Oberthür expresses the opinion that the *Erebia* found during the last few years near Campiglio, in the Southern Tyrol, is a local form of *E. melas*, which he names var. *Nicholli*, and says, "Dr. Staudinger insists on looking upon it as *glacialis*, Esp. I will not dwell upon the astonishment which an opinion so manifestly erroneous on the part of an entomologist of great experience has caused me. It is true that Dr. Staudinger only knows the male and not the female, but even without knowing the female the matter does not seem to me disputable." I feel obliged to rectify the assertions of my entomological friend Ch. Oberthür, I never looked upon this *Erebia* as *glacialis*, Esp., but I take it for a striking local form of that species. It is not correct that I only knew the males when I wrote my opinion of this *Erebia* to M. Oberthür; I did not possess the female, but I had the opportunity of comparing 22 males and 7 females, while M. Oberthür had only 2 males and 1 female before him. The first male I received some years ago, through the kindness of Mr. H. J. Elwes, as *E. melas*; without examining it very closely I put it into my collection as *E. melas*, but when I saw the first female I was convinced that it could only be a local form of *E. glacialis*. As I have seen at least 1000 specimens of this species from the European Central Alps and more than two hundred of *E. melas* from Banat and Greece, I believe that my opinion on these two species may not be so "manifestly erroneous" as M. Oberthür supposes. He further states that this matter does not seem to him disputable. I think he is not infallible.

Superficially the resemblance of the Campiglio *Erebia* with *E. melas* is great, principally because of the conspicuous ocelli on the hind-wings which misled M. Oberthür and others and caused them to take it for *melas*. After a careful examination of the form of the hind-wings, the antennæ, and the coloration of the under-side (particularly of the female), and an exact comparison with the typical *E. glacialis* and *melas*, I and my friend Herr Calberla have no doubt it is a local form of *glacialis*. Herr Calberla observed this Campiglio form flying and captured a large number of specimens last year, and he will give in the "Iris," vol. ix, of this year, the precise, and, as I think, the convincing reasons for his and my opinion on this form. I do not say that the opinion of M. C. Oberthür and Mr. F. C. Lemann, (page 4) is "so manifestly or curiously erroneous" as they say of mine. It may be that *E. glacialis* and *E. melas* are the variable forms of one species (surely they are derived from one species), the first is the form from the European Central Alps, the second from the mountains of Hungary and the Balkan Peninsula. *E. Lefebvrei* is the form from the Pyrenees, *E. Hewitsoni* from the Caucasus.

As a very similar or the same form to that taken at Campiglio was named and figured nearly 100 years ago, the name *Nicholli*, Oberthür, sinks to a synonym.

Blasewitz, Dresden:
February, 1896.

AN EXPERIMENT BEARING ON THE NUMBER OF LARVAL INSTARS, AND THE DISTINCTNESS OF LARVAL AND PUPAL INSTARS IN *LEPIDOPTERA*.

BY T. A. CHAPMAN, M.D., F.E.S.

Some half dozen years ago I had some ova of *Agrotis comes*, var. *Curtisii*, and when they reached their last skin, I placed some on a diet of *Arbutus unedo*, the date being about December, the object being to see whether different diet would produce any effect on coloration.

In fact, the *Arbutus* leaves proved very dry, and though the larvæ ate them, they did so sparingly, and were in truth starved. So soon as this was unquestionable, or, perhaps, not quite so soon, I restored them to dock (*Rumex*), the majority however shortly died, two undertook an extra or additional moult, a post-ultimate moult, of these one shortly died, but the other grew immensely, and was, as regards size, rather a *pronuba* or a *fimbria* than a *comes*. It also died, not so far as I could judge from inherent necessity, but as any normal larva might, and too frequently does, die. As I take much interest in the question of moulting of larvæ, I intended some day to repeat this experiment, and last September a batch of eggs of *comes* having fallen into my hands, I made the attempt. The result seems of sufficient interest to report, and though it may be described as a failure, it suggests various interesting points for investigation, when the conditions necessary to success are ascertained.

The aspect that chiefly interested me was the question as to the definiteness of each larval instar; so far as my observations had gone this seemed to vary in different species. *Orgyia antiqua* appeared to vary by one moult for no ascertainable cause. *Arctia Caja* appeared capable of interpolating an indefinite number of moults, at a stage about two instars before the last. *Acronycta alni* had dropped one moult in order to make the change from the immature to the adult plumage more sudden, retaining a possibility of reverting to its possession, and then manifesting the last intermediate stage, but this instance of *comes* was the only unmistakeable trace of another larval instar being capable of following the one normally the last.

In this experiment when the larvæ reached the last instar, I diminished the food supplies, so that instead of feeding up in twelve or fifteen days, they had made but half growth after five or six weeks, and then I placed them on abundant diet.

In spite of this treatment, a certain number went normally into pupa, others died in attempting to do so; some few came to grief by way of cannibalism, which was, however, much rarer than might have been expected, and a very few made the effort towards a further larval instar, that I have now to describe.

These larvæ assumed the ordinary appearance and attitude of larvæ about to moult, but only two actually succeeded in doing so, two or three others partially succeeded, but the others failed to do so, and their true condition could only be ascertained by artificially removing the larval skin.

In so far as regards the body generally, markings and so forth, the larva was quite normal, but larger (and darker). The prolegs seemed normal as regards form and retractility, but in no instance possessed any hooks. In several instances the thoracic legs were normal, in others possessed thickenings and projections of their basal joints.

The labrum and mandibles are those of a normal larva and the labium is but slightly altered in most instances. The maxilla is more or less altered in all, in some there is quite a short haustellum present, in others the base is merely thickened; in two this is the case, with the two normal palpal processes much lengthened. In all cases the antenna is most altered, the basal joint is large and bladder-like, whilst the remainder is from 1 to 3 or more mm. in length, in one considerably longer, folded together as the pupal antenna is, within the larval head, before moulting it becomes brown and transversely ribbed, just like the pupal antenna, but has a white soft terminal joint with a terminal bristle. The head is, in one or two, enlarged proportionally to the extra moult, in others is rather smaller, but being in most distorted by the non-moulting of the larval skin, cannot really be definitely described, except that it is broadly the ordinary larval head. The eyes are, however, more or less altered. In nearly all the six eye-spots can be observed, but the two upper are usually smaller or disappearing. They have amongst them yellow, raised, clearly defined patches, which I do not understand. In several of the larvæ is a crescentic slightly raised mark lying between the eye-spots and the base of the antenna; this is clearly the crescentic mark of the "glazed eye," both from its form and from its position, the latter not at first recognisable, until it is remembered that the face becomes bent forwards in the pupa, and that the antenna is thrown backwards.

Though possessing normal jaws, which they could move freely, none of these larvæ made any attempt to eat, so that they were clearly in a different condition from the one larva of my former experiment, which I did not examine carefully, but which seemed to be a normally organized larva. These, on the contrary, partake to a great extent of pupal characters, chiefly in the change in the antennæ, also in the maxillæ, to some degree in the thoracic legs, in the want of crotchets to the prolegs, and most interestingly in the eye changes. I think they show clearly that the crescent of glazed eye is an appendage to the eye, but is not in any way a part of the eye itself, since it is distinctly separate from the larval eyes, just as in the pupa, it is outside the area which often shows indication of the hexagons of the imaginal eye, and beneath which that commences its development.

The two experiments show that there is either in different races of *comes* a different amount of resistance to such changes, or that different circumstances vary in their effects, points of interest for further research. Another interesting suggestion that arises is as to the possibility of a species differentiating into a larger and smaller species by this process, a result that would clearly be one of discontinuous variation, and such pairs as *Triphæna orbona* (*subsequa*) and *pronuba*, *fimbria* and *janthina*, are close at hand by way of conceivable illustration. In *Orgyia antiqua* the differences of moults make no difference, or no appreciable difference, in the size of the moths. In *Diphthera Orion* the extra moulters are all much larger in size, but the two forms are inextricably mixed, with no tendency to divide into two races.

Hereford: *February*, 1896.

OBSERVATIONS ON *COCCIDÆ* (No. 14).

BY R. NEWSTEAD, F.E.S.,

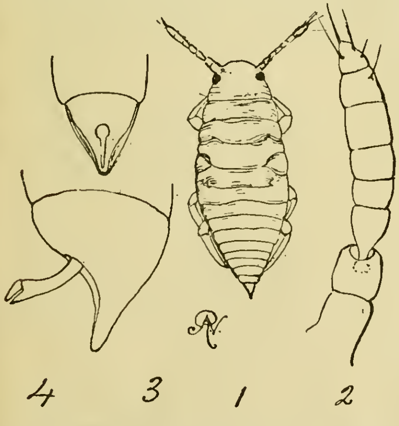
CURATOR OF THE GROSVENOR MUSEUM, CHESTER.

Ripersia fraxini.

Eriococcus fraxini, Newstead, Ent. Mo. Mag. (2), vol. ii, p. 164.
Ripersia fraxini, *id.*, *op. c.*, vol. iii, p. 145.

In my description of this species (*l. c.*) the ♀ only was known to me, I have pleasure, therefore, in appending the description of the ♂ and ♂ pupa.

♂ (fig. 1). Apterous. Bright orange-red, or orange-yellow; abdomen, legs and antennæ paler, sometimes greenish-yellow. Very elongate, attenuated behind. Head a very little narrower than the body, to which it is not clearly articulated; eyes black; ocelli absent. Antennæ (fig. 2) of eight nearly equal joints; the articulation of the 2nd and 3rd joints together forming a structure like a ball and socket joint; a character not hitherto observed in the *Coccidæ*. Legs ordinary; the four digitules to the tarsi are very small; and there is a rather long hair on the trochanter. Genital armature extremely short; penis-sheath straight when in its normal position, but almost completely hidden within the outer sheath (fig. 3, ventral surface); apex of penis-sheath shaped somewhat like the chela of a crab's claw, having an articulated valve-like arrangement at the apex (fig. 4, profile view



with the penis-sheath disarranged). Pupa of the same colour as the ♂; more or less ovate, but varying according to the age of the individual. Legs, antennæ, &c., clearly defined; but no trace of wings.

Abundant during October and November near Chester, and evidently a very hardy species, as the early frosts they encountered in no way lessened their numbers, or their activity. As early as 8.30 a.m., after four degrees of frost, I have seen the males actively engaged in searching for their partners, but on the south-east side of the tree trunk only; those on the north side were apparently dormant. This is the most abnormal ♂ of any species of *Coccidæ* it has been my pleasure to examine, and owing to its peculiar form I had long considered it the full-grown larva or second stage of the ♂. The discovery of the ♂ pupa, which bears a strong resemblance to the perfect ♂, and has no trace of wings, is conclusive proof the insect described above is an adult.

As it is the first, and only known ♂ of any species of the genus yet described, its discovery is of great interest. The ♂ of other known species may have been similarly overlooked, but now that we know what to look for others may turn up at any time.

LECANIUM BITUBERCULATUM, Targ.-Tozz.

♂ dark or pale red, sometimes inclined to coral-red; thoracic band much darker. Eyes and ocelli black. There are two of the latter above, and two beneath. Legs and antennæ reddish-yellow. Wings rather short. The very slender caudal filaments more than twice the length of the body.

♀, at period of fecundation, light red, or reddish-yellow, with four broad transverse bands interrupted on the dorsum by a narrow central keel, which is of a paler colour than the bands, and very shining. The four channels leading to the spiracles, strongly indicated above by well defined carinæ, are situated on the two central bands. Margin with a much interrupted fringe of glassy material. Anal cleft well defined.

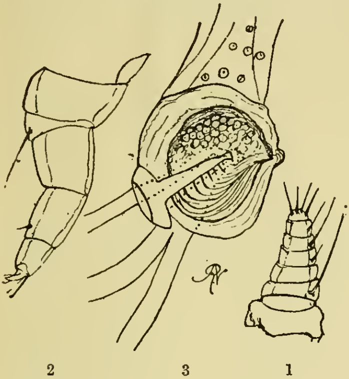
The minute size of the ♀ at period of fecundation is most remarkable. In all the *Lecania* which I have hitherto seen, the ♀ attains its full size before fecundation, and is then, as compared with the ♂, a huge gravid creature, more than fifty times as large as her partner.

The above descriptions are from specimens obtained at Heacham, Norfolk, July 23rd, 1895, on *Cratægus oxyacantha.* The ♂ and ♀ second stage are now described for the first time; but I should add, Herr Šulc has also discovered the ♂ in Bohemia.

For the most part the young ♀ occur on the branches; but a few were also found on the leaves. Those in the latter situations would probably descend to the branches after fecundation. All the ♂ scales occurred on the leaves only. As this habit does not obtain in any other species of *Lecanium* found in this country, it was by the merest chance I discovered them.

LECANOPSIS BREVICORNIS, *n. sp.*

♀ bright red, red or reddish-crimson; ovate, narrowed in front, convex above, flat beneath; dermis very firm, especially so at margins; segments clearly defined. Antennæ (fig. 1) black at the tip, extremely short, tapering, as long as the tibia and tarsus together; of seven nearly equal joints, 1 much the widest, 2, 4, 5, 6, each with a single hair, 7th with four or five; that on the 2nd joint much the longest. Rostrum wide, uniarticulate; unexpanded filaments a little longer than the legs. Legs (fig. 2) very short and stout, black, shining; tibiæ much shorter than tarsi; digitules to claw and tarsi simple; there is a long hair on the trochanter, and another at the base of the tibiæ; coxæ very broad. The antennæ and legs are broadly margined with dark brown chitine. Spiracles (fig. 3) unusually large, in length about equal to the antennæ, shaped somewhat like a trumpet, broad at apex, narrow at base, where they are attached to the centre of a large circular depression or cavity; one side of the cavity is almost entirely composed of minute circular spinnerets; and outside the margin of the cavity are several larger spinnerets. There are three tracheal tubes radiating from each of the four spiracles. Dermis at the margins of the body with a broad band of circular spinnerets, but such almost entirely wanting in front and behind. Anal cleft and anal dorsal lobes normal.



In what is apparently the adult stage the ♀ covers herself entirely with a very thin test, of a material closely resembling talc, which is irregularly cracked all over; the cracks are merely indicated by white lines, there is no actual separation of the material. Long., 2·50—3·75; wide, 1·50 mm.

Hab.: Snettisham Beach, near King's Lynn, Norfolk; two specimens discovered by the writer, July 1895, in grass roots amongst sand and gravel. Also two specimens at Llandudno, N. Wales, by Mr. C. W. Dale, September 1895.

Easily recognised by its very short, 7-jointed antennæ; short legs; large spiracles; and by the ♀ covering her body at gestation with a glassy test.

Two of the specimens were covered with the test; the other two were naked, much smaller, and although living, were perfectly inert. This latter character is most singular, and I can only surmise they were adults at the ordinary period of test-making and gestation, and consequently had no need of ambulatory power.

ICERYA ÆGYPTIACA, Douglas.

A single adult ♀ of this pest has been forwarded to me, through the kindness of Mr. Douglas, from the Royal Gardens, Kew. It was imported from Calcutta on *Aristolochia saccata*, received November 9th, 1895.

As this species has proved so destructive in the east, I learn that the authorities at Kew thoroughly realize the importance of its discovery in England, and that the most stringent measures have been adopted for its speedy extermination.

On December 7th, 1895, through the kindness of Miss Tomlin, I also received several specimens from Calcutta on a plant unknown to me.

CHIONASPIS ASPIDISTRÆ, Sign., ♂ ♀.

I have a small colony of this species on *Asplenium*, sp. It was discovered by Miss Tomlin in a greenhouse near here, and is now recorded for the first time as occurring in Britain. The ♀, for the most part, lives on the stems, while the ♂ occupies the upper portions of the fronds. My specimens were first identified as *Ch. braziliensis*, Sign. (Essai., p. 126); but Herr Šulc, who has very kindly examined my specimens, says, "they agree to a hair" with Signoret's types of *Ch. aspidistræ*.

As regards *Ch. braziliensis*, Sign., Herr Šulc states there is no original of this species in the Hof-Museum at Vienna; and owing to Signoret's somewhat imperfect description, it will be impossible to identify the species with any certainty. Mr. Maskell (Trans. N. Z. Inst., 1892, p. 210) has recorded *Ch. braziliensis* from Australia, and has also identified the species from Calcutta, where it was collected by Mr. E. E. Green. Since Herr Šulc's valued information has come to hand, Mr. Green is convinced that his specimens are the *Ch. aspidistræ*, Sign.; and in all probability Mr. Maskell's specimens from Australia are the same.

Chester: *January*, 1896.

ON SOME HOP-PESTS.

BY F. V. THEOBALD, M.A., F.E.S.

FORFICULA AURICULARIA.

During the past year quite a new insect pest to hops has made its appearance amongst the bines belonging to the S. Eastern Agricultural College at Wye. This devastator was the common earwig (*Forficula auricularia*), which has been so abundant generally during the past year. It was noticed in July that the leaves of the hops were very much eaten in a curious ragged way, especially towards the centre of the leaves; in many cases only the large veins were left, the entire central soft tissue being eaten away. The damage looked at first sight as if caused by some root trouble, but on examination it was clearly seen to be the work of an insect. The destruction took place during the night to a serious extent. On stirring the earth in the hills thousands of young earwigs (*F. auricularia*) were found during the day time. I counted as many as 120 in one hill. They were nearly all wingless, that is, immature forms, a few adults were, however, also present. At night one could watch these insects by the aid of a lantern devouring the foliage with great rapidity, especially the young tender leaves. As these pests grew the damage naturally increased, and much harm was done to the young plants. The whole of a five acre plot was attacked. At sunrise all the earwigs, or anyhow most of them sought refuge under the ground. It seems the adults readily take to the wing on certain nights, especially when the moon is bright. Numbers later in the year used to fly into my house of a night, attracted by the lights. Possibly in this way fresh recruits were constantly coming to the hop garden. Soot dusted around the hills kept them in check, but unless renewed every week is not successful. *F. auricularia* is often very abundant and destructive to flowers and vegetables, but this is the first and only attack on hops that has come to my notice.

CALOCORIS FULVOMACULATUS.

Considerable damage has been caused to the hops during the past year by the Hemipteron *Calocoris fulvomaculatus.* My attention was first called to it in June near Tonbridge, many of the hop gardens in that district being badly infested with this bug—"shy-bug," as it is generally called by the growers, on account of its timid and active nature. Its food-plants seem to be chiefly the hop and currant. Hundreds could be seen and caught in most gardens on the upper tender parts of the bines, sucking out the sap and leaving behind a distinct scar, as figured in the Journal of the S. E. Agricultural College (No. 2). The females lay their eggs on the poles and upon the older bine, and most likely in other places as well, at present unknown, each female laying about 100 eggs. They mostly disappeared from the gardens at the end of July. Two other Hemipterons belonging to the genus *Anthocoris* were also abundant, one *nemorum*, the other *confusus*. Both were sufficiently abundant to do much harm to the tender hop leaves, which they attacked during the summer.

Occasionally these species feed upon the "hop lice," and so do good as well as harm, but from personal observations I find they are often terribly destructive, and have been so for some years. The *Calocoris* is, however, a new hop-pest, and by far the most destructive.

Wye Court, near Ashford:
January 3rd, 1896.

ON A NEW SPECIES OF *STERNOCŒLIS.*

BY G. LEWIS, F.L.S.

This is the fourth species of *Sternocœlis* described in the pages of this Magazine, and it is the twenty-fifth species known of the genus.

STERNOCŒLIS VAUCHERI, *sp. n.*

Breviter ovalis, brunneo-testaceus, convexus, hirsutus; capite grosse punctato sed punctis minime profundis, utrinque carinato; prosterno carinis sinuatis, antice conjunctis. *Long.*, 1½ *mm.*

Shortly oval, brownish-testaceous, convex, with rather long fulvous hair; the head, surface with large shallow punctures, not closely set, distinctly carinate on either side; the thorax laterally somewhat widely sinuous, widening out from the anterior angle to the base, anterior and lateral borders punctate like the head, punctures gradually becoming sparse posteriorly, leaving the ante-scutellar region free of all but a few fine points; the scutellum smooth and triangular; the elytra finely and very sparsely punctulate with three striæ, first and second complete, third dimidiate, with fulvous hairs set in rows at intervals; the propygidium and pygidium very evenly punctured, punctures smaller than those of the head and more distinct and more circular in outline; the prosternum, anterior lobe coarsely and thickly punctate, prosternal carinæ well marked, widening out at the base, feebly sinuous before the coxæ, joining anteriorly and forming a somewhat sharp point, intervening space visibly concave and punctate, punctures more shallow and smaller than those on the lobe; the legs rather strongly dilated (corresponding in this respect to *S. Marseuli*), intermediate pair angulate on the middle of the outer edge.

The only known species of *Sternocœlis* which resembles the above in the form of the prosternum is *S. Marseuli*, but in the last the intervening space between the carinæ is flat, and the carinæ much less strong. *S. Vaucheri* and *S. Marseuli* are the only species of the genus at present known in which the prosternal carinæ meet anteriorly, and correspond in form to those of *Gnathoncus rotundatus*, Kugel.

Hab.: TANGIER. I have named the species after its discoverer, Mons. Henry Vaucher, who was fortunate enough to find it in a nest of *Aphænogaster crocea*, André, last January.

Southampton: *February 5th*, 1896.

Wood naphtha as a relaxing medium for Coleoptera.—In this Journal (vol. xxxi, p. 21) Dr. Knaggs has described a method devised by Mr. Clark of relaxing insects, meaning apparently *Lepidoptera*, by the use of wood naphtha. It may be of interest to know that I have found the plan very successful for relaxing and resetting *Coleoptera*. It is always difficult to extend the limbs of the small *Scolytidæ* at which I have been lately working. If relaxed in moist air, they must be fixed on their backs by gum, in order to hold them in position while the legs are extended one by one. It often happens that by the time the gum is dry enough to secure them firmly, they have themselves become somewhat brittle and rigid. With wood naphtha I have had no trouble whatever. The specimen is floated off the card, and is washed till all gum is removed from the under-side, an easy task, unless gum tragacanth has been used. It is then gummed on its back, and when fixed, is well wetted with a brushful of naphtha; the limbs are usually pliable at the end of a minute, if not, the naphtha may be re-applied. When the limbs are extended the spirit is allowed to evaporate, the specimen is then floated off, washed free of gum, and mounted in the usual way. If it is necessary to release a single limb or antenna only, the naphtha may be applied to that part alone. At present I have tried naphtha on no other *Coleoptera*, but for *Scolytidæ* I find it more handy than water, enabling the whole process of relaxing and re-mounting to be carried out in twenty minutes or so. If that detestable material, gum tragacanth, has been used to stick down unset specimens, it must be carefully worked off the under-side and limbs with a moist brush. As it contains a constituent insoluble in water or any other available medium, it is most difficult to get rid of, but if not removed, it infallibly leads to breakages. Those interested in the relaxation of *Lepidoptera* may like to have their attention called to a paper by E. Hering in the Stettiner Ent. Zeitung (1895, pp. 235—242), in which recent methods are discussed.—W. F. H. Blandford, 48, Wimpole Street, London, W.: *January 30th*, 1896.

Black Pins.—Whilst the winter is still upon us, and collecting practically at a standstill, it appears to me to be a good time to ask entomologists and collectors if they realize what the rage for unnecessarily fine black pins is likely to result in. I take it that it will be generally admitted that a pin is an implement, the best that has been devised up to the present, on which to mount an insect, so as to afford an easy and safe mode of handling it, either for examination or removal. Do we attain this end by the present system? I think not.

In the first place the process of japanning requires the application of considerable heat; the pins are, in fact, baked. This is immaterial so far as regards larger pins, such as the black mourning pin of commerce, but with fine entomological pins, probably cut from German wire, the process of baking so anneals the metal, that, in the majority of cases, it renders the pin as pliable as pack thread.

Japanning has a further disastrous effect, inasmuch as it blunts the pin, and, instead of being a sharp instrument, capable of being forced by a gentle pressure through any ordinary paper and cork, the present fine black pin generally refuses to penetrate, either by force or persuasion, not unfrequently crumpling up, to the complete disintegration of the insect upon it; or, if the matter is not so disastrous as that, we have all, I suppose, experienced disappointment on finding the pin transformed into a fair average specimen of a crochet hook and fit for nothing.

As a protection against the destructive effects of grease, I need hardly refer to Dr. Knaggs' paper, in which he demonstrates that it is of but small, if any advantage (*vide* Ent. Mo. Mag. (2), v, pp. 252 *et seq.*). There is, therefore, as far as I can see, no advantage save neatness, and when this is obtained at so serious a loss of stability, I venture to think that entomologists would be wise to forego this small recommendation.

Our predecessors were wiser in their generation, and used sufficiently strong white English pins for their specimens, with the result that such insects as *P. dispar* and *L. Acis*, &c., are as fit for removal now as they were when captured fifty years ago. The result of their having used the miserable fine black pin so much sought after in these degenerate days, would have been the utter destruction of by far the majority of the specimens or species now extinct, and so much coveted by modern collectors. I have, therefore, grave doubts whether the modern method of pinning on fine black pins is an improvement upon the old, it certainly fails in the important character of stability.—F. LOVELL KEAYS, 26, Charles Street, St. James's Square, S.W.: *February*, 1896.

Asychna æratella, Z., two years in the larval state.—In Ent. Mo. Mag., ser. 2, vi, 132, is recorded the very limited amount of success that I experienced in 1894 in breeding *Asychna æratella* from galls on stems of *Polygonum aviculare*, containing full-fed larvæ, kindly sent me in August, 1893, by Mr. W. H. B. Fletcher, who found them in a field on the downs near Shoreham, Sussex. Thinking it not improbable that some of the larvæ might be lying over, I sorted out the galls in the autumn of 1894, and leaving in the flower-pot, almost filled with soil, all that showed no exit hole, followed the plan of Mr. B. A. Bower, who alone had succeeded in breeding the moths freely in that cold summer, and sunk the pot in a flower-bed, fully exposed to the sunshine, of which there was such an abundance last spring. In May I was delighted to see that in many of the galls exit holes were being bored, a sure sign that the larvæ were about to pupate, and on June 9th the first imago appeared, being followed between then and July 3rd by 46 others (varying, as do the galls themselves, greatly in size), of which, however, a few were cripples, together with some half-dozen examples of an ichneumon-fly not yet determined. The moth emerges from the pupa inside the gall, and then forces its way through the exit hole, which is bored close to the apex as a rule, but in rare instances close to the base of the gall, the pupa shell being left in the cocoon in the interior of the gall; escape from the gall usually takes place between about 8 and 11 a.m., but more individuals were observed drying their wings at about 8.30 a.m. than at any other time. I regret now that I did not divide the galls into two lots, and keep one in a cooler place, to see whether some larvæ might not have been induced to lie over till the third year. Mr. Fletcher, whose success in breeding them in 1894 was no better than mine, was also rewarded with a goodly series of imagines last year, but I fear that others, who might then have been equally fortunate, had thrown away their batches of galls after the first year's failure. It seems clear that the galls should be kept out of doors during the winter, but should all along be exposed to as much sunshine as possible, so that the larvæ may be induced to pupate and produce moths in the following summer. Probably in nature also some larvæ often lie over, waiting for a sufficiently favourable season. An interesting account of the species, with coloured figures of the imago, larva, and galls, will be found in the Nat. Hist. Tin., vol. xii.—Eustace R. Bankes, The Rectory, Corfe Castle: *February 15th*, 1896.

Remarkable variety of Gelechia domestica, Hw.—Among some *Lepidoptera* received for identification from the Rev. C. R. Digby in the autumn of 1894 was the most startling variety of *Gelechia domestica* that I had ever seen. The head, thorax and basal portions of the fore-wings, up to about one-third of their length, are whitish-ochreous, but whiter even than in ordinary pale examples, whilst the whole of the rest of the wing area is blackish-fuscous, only relieved by a few small scattered whitish-ochreous scales and a small spot of similar colour on the costa, which spot is the only vestige of the obsolete fascia; the ordinary black stigmata in this part of the wing are invisible, but the three typical black spots nearest the base, being in the pale area, are well defined. The fringes are pale whitish-ochreous, but for a dark longitudinal dash at the apex of the wing. Hind-wings and fringes of the usual colour. This species often varies considerably, some specimens being very pale, whilst in others the pale ground-colour is much obscured with fuscous, but the individual under notice presents a wonderful combination of the two most opposite extremes of variation that can well be imagined.—Id.

Cucullia gnaphalii near Sevenoaks.—I took a larva of this insect in the Sevenoaks district on August 24th, 1894; it spun up on August 27th, and the perfect insect appeared on June 23rd, 1895.—Edward Goodwin, Wateringbury: *February*, 1896.

Dorset localities for species of Pericoma.—Amongst a dozen species of *Psychodidæ* which the Rev. A. E. Eaton has kindly named for me, are four which are (he tells me) of sufficiently local distribution to make a record of their localities interesting. They are as follows:—*Pericoma compta*, Etn., three specimens from near Weymouth, September, 1890; *P. neglecta*, Etn., one specimen from Abbotsbury, August 5th, 1891; *P. morula*, Etn., one specimen from near Weymouth, May 29th, 1891, and one from Bloxworth, bogs, July 8th, 1891; *P. fusca*, Macq. (*nec P. calceata*, Mg.), two specimens from Bloxworth, bogs, July 8th, 1891. This last, a rather conspicuous blackish species, was, if I remember rightly, abundant where it occurred, in the swampy ground by the river, not in the heath bogs.—Nelson M. Richardson, Montevideo, near Weymouth: *September 25th*, 1895.

Reviews.

The Label List of British Lepidoptera, compiled after "A Handbook of British Lepidoptera:" by Edward Meyrick, B.A., F.Z.S., F.E.S. 34 pp. 8vo. London: Watkins and Doncaster. 1896.

This List is very clearly printed, and on fine paper, and seems admirably adapted for its purpose. The generic names are in Roman type, the specific in italics. But it seems a pity that a lower fount of type should have been used for the old *Micro-Lepidoptera*, the larger size being, however, maintained for the goat-moth, "Swifts," etc., that find themselves "degraded" in the new arrangement.

CICADINEN (HEMIPTERA-HOMOPTERA) VON MITTEL-EUROPA: von Dr. L. MELICHAR. 8vo. pp. i–xxvii, 1–364. 12 plates. Berlin: Felix L. Dames. 1896.

The preface indicates that this work has been undertaken with the view of obviating the difficulties that beset the beginner of the study of the *Cicadina*, in consequence of the labours of the writers thereon being diffused throughout many journals, monographs and articles; as well as to afford a guide to other entomologists who, for want of help in the definition and determination of the families, genera and species of this interesting Order, have not paid any attention to it. For this purpose the results of the investigations of Fieber, Flor, Signoret, Ferrari, Kirschbaum, J. Sahlberg, Puton, Buckton, Edwards, &c., as shown in their separate works, as well as in the numerous papers in periodicals by Marshall, Puton, Lethierry, Scott, Douglas and others, are here brought together and consolidated in one view.

The work embraces the *Cicadina* of Mid-Europe, Austro-Hungary, Germany and Switzerland. Most of the British species are included: the few exceptions may in time to come be found to occur on the continent of Europe. The scheme adopted contains a short historical Review of the bibliographical literature; a Synopsis of the outward anatomy; a chapter on localities where *Cicadina* are to be found, and instructions for collecting and preparing them. Then follow a statement of the characters of the eight Families into which the *Cicadina* are divided, and under each of these the characters of the genera and descriptions of the species. The plates are engraved in the best manner, and illustrate the cardinal generic characters. The work has been rendered the more valuable by reference to the rich Imperial Museum at Vienna, and its library, and by the great help afforded by its officers, all of which have been at the disposition of the author.

The result of the whole is exceptionally excellent, and no one who desires to be inducted into the study of the *Cicadina*, and to avail himself of a facile guide to the knowledge of the species, will be able to dispense with this efficient work.

Obituary.

Prof. Philipp Bertkau, Ph.D.—Through an oversight we have omitted to notice earlier the decease at Bonn of this hard working German Zoologist on the 22nd October last, after a long illness. He was born at Cologne on January 11th, 1849, and after a training in Natural Science, settled in Bonn in 1874 as tutor in Zoology, subsequently becoming Curator of the Museum in that town, and Secretary of the local Natural History Societies. The greater part of his published papers concerned *Arachnida*, and especially their anatomy, but he also wrote on *Psocidæ*, *Orthoptera*, &c., and his last paper of importance was a list of arthropodous hermaphrodites so far as recorded. In drawing up this he was no doubt greatly assisted by the bibliographical researches he had to make as compiler of the entomological portion of the German "Bericht," he having succeeded Gerstäcker and Brauer, and in carrying out this useful work he lightened the labours of hosts of entomologists. Personally he was much esteemed by his friends and pupils.

Arthur Sidney Olliff, F.E.S.—We have recently received news of the decease of Mr. Olliff at Sydney, N. S. W., on December 29th. He had been ill for some time, but we were not prepared to hear that his indisposition had terminated fatally. He was the only son of Mr. S. J. Olliff, of Hornsey, London, and was born in 1865, being only just over 30 when he died. Passionately devoted to Entomology when only a young boy, he sought congenial work in the office of the late Mr. E. W. Janson, by whom he was employed in setting and preparing insects; afterwards he obtained occupation at the British Museum in a similar capacity; subsequently he became Curator and Private Secretary to Lord Walsingham; and in December 1884, he left England, having obtained a position in the Australian Museum at Sydney; in 1890 he was appointed Government Entomologist in connection with the Agricultural Department of New South Wales. Only last year he published an important official pamphlet of 15 pp. with four plates, on the so-called "vegetable caterpillars," under the title, "Australian Entomophytes." Though scarcely more than a boy when he left England, Olliff had made many friends, and in some respects he was a precocious genius, for so long ago as 1883 (when he was 18 years old) he published a paper, describing new *Coleoptera*, in the Trans. Ent. Soc. Lond., and this was followed immediately by others in various English Magazines, &c. Bad health overtook him before he had time to fully develop his powers as Government Entomologist. He joined the Entomological Society of London in 1886.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *December* 16*th*, 1895.—Mr. GEO. H. KENRICK, F.E.S., in the Chair.

Mr. J. T. Fountain, 58, Darwin Street, Birmingham, was elected a Member of the Society.

Mr. R. C. Bradley showed fine specimens of *Æschna juncea* and *grandis* from Sutton Park. Mr. Kenrick, a few *Lepidoptera* taken during a short trip on the Norfolk Broads; he had cruised in a wherry and collected chiefly by means of light from the boat; among the things taken by this means and shown were *Leucania albipuncta*, *Nonagria despecta*, and *Calamia phragmitidis*; he also tried sugar, but with poor results, the best thing he got being *Apamea fibrosa*; he likewise showed a pair of *Plusia festucæ*, small and dark, bred from larvæ found there.

January 20*th*, 1896.—Mr. P. W. ABBOTT, Vice-President, in the Chair.

Mr. Abbott showed *Notodonta dodonea* from Wyre Forest; a fine dark ♀ *Nonagria typhæ*, one of two bred from a large number of pupæ taken in Norfolk by himself and Mr. A. J. Hodges last year; also pale ♂ *Odonestis potatoria* from Norfolk, being almost as pale as normal ♀. Mr. R. C. Bradley, *Erigone vagans*, a handsome Tachinid, which he took in Sutton Park last June; it was flying round the pines in company of many *Tipulidæ*, bees and other insects, indeed, all the insects seemed attracted to the pines, and the flowers were quite deserted. He believed the attraction to be the resinous exudation from the trees, as he could find no sign of any other, such as honeydew. Mr. Wainwright, Micros, including *Stenia punctalis* from Boscastle, Cornwall. Mr. Martineau, six cases of *Hymenoptera* from his collection, containing many fine and interesting species.

February 3*rd*, 1896: SEVENTH ANNUAL MEETING.—Mr. G. T. BETHUNE-BAKER, President, in the Chair.

Mr. C. A. E. Rodgers, 31, Hall Road, Handsworth, and the Wells House, Malvern Wells, was elected a member of the Society. The Annual Reports of the Council, the Treasurer, and the Librarian were presented and were duly received. The following were elected Officers and Council for the ensuing year:—as President, Mr. G. H. Kenrick, F.E.S.; Vice-President, Mr. G. Bethune-Baker, F.E.S.; Treasurer, Mr. R. C. Bradley; Librarian, Mr. A. H. Martineau; Hon. Sec., Colbran J. Wainwright, 147, Hall Road, Handsworth, Birmingham; remaining members of Council, Messrs. P. W. Abbott, W. Harrison, E. C. Rossiter and G. W. Wynn. Mr. J. T. Fountain showed a beautiful specimen of *Arctia Caja*, all the red being replaced by cream colour, and the white of the fore wings much extended. Mr. P. W. Abbott showed *Mamestra furva* from Bay of Nigg, N. B. Mr. W. Harrison showed some nice *Catocala sponsa* from the New Forest. Mr. R. C. Bradley showed three species of *Loxocera*, viz., a series of *aristata*, Panz., a pair of *albiseta*, Schrank, and a pair of *sylvatica*, Meig., all from Sutton, the last quite new to the British List.—Colbran J. Wainwright, *Hon. Secretary.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *January 9th*, 1896.—T. W. Hall, Esq., F.E.S., President, in the Chair.

Mr. F. Clarke, A.P.S., of Paddington, was elected a Member.

Mr. Carpenter exhibited a long series of *Colias Edusa*, Fb., being a third brood, and bred from ova deposited by a female captured in August, 1895; the last emerged during the third week in November. Mr. Mansbridge, a series of *Hybernia marginaria*, Bork., consisting of the London typical forms, and a long series of melanic and variegated forms from York. A long discussion took place on the occurrence of these melanic forms; remarks were also made on the various forms of *Gnophos obscurata*, Hb., and it was noted that it invariably assimilated to the colour of its local environment. Mr. Adkin, specimens of very strongly marked forms of *Hybernia defoliaria*, Clerck, from Sussex. Mr. Mera, a series of *Agriopis aprilina*, L., from Elgin and Sussex; the northern forms possessed very complete bands. Mr. Edwards, *Papilio Cenea*, Stoll, and the three forms of its female, viz., *P. Cenea*, Stoll, *P. Hippocoon*, Fb., and *P. Trophonius*, Westw., with intermediate forms; the three species of *Danaidæ* mimicked by the above, viz., *Amauris echeria*, Stoll., *A. dominicanus*, Trim., and *Danais Chrysippus*, L.; the closely allied species, *P. Meriones*, male, from Madagascar, and *P. Merope*, Doub., male and female, from W. Africa, with *Amauris Marius*, which the latter mimicked; and also *Diadema Nisippus*, L., and *D. Anthedon*, Bdv., which mimic *D. Chrysippus* and *A. dominicanus* respectively. Mr. Hy. J. Turner read a paper on the above exhibit, entitled, "Mimicry, as exemplified by the S. African butterfly, *Papilio Cenea*, Stoll, its varieties and allied species."

January 23rd, 1896: ANNUAL GENERAL MEETING.—The President in the Chair.

The Reports of the Council and Treasurer were read, and showed that the Society still maintains its very satisfactory condition, both numerically and financially. The election of Officers and Council for the ensuing year then took place, as follows: President, R. South, F.E.S.; Vice-Presidents, C. G. Barrett, F.E.S., T. W. Hall, F.E.S.; Treasurer, R. Adkin, F.E.S.; Librarian and Report Secretary, H. J. Turner, F.E.S.; Curator, W. West; Hon. Secretary, Stanley Edwards, F.L.S.; Council, C. A. Briggs, F.E.S., J. H. Carpenter, John T. Carrington, F. W. Frohawk, F.E.S., W. Mansbridge, F.E.S., W. A. Pearce, and H. A. Sauzé. The President then read his Address. Mr. Tutt, on behalf of Mr. W. E. Butler, of Reading, exhibited specimens of *Argynnis Latona*, L., said to have been captured in Devonshire by Mr. B. Stafford Chope, and showed, from documentary evidence and other circumstances, the great improbability of their being of British origin.

At the close of the Meeting the President announced the munificent donation, by Mr. C. A. Briggs, of the Herbarium which had been formed by the late Mr. W. H. Tugwell.—Hy. J. Turner, *Hon. Secretary*.

Entomological Society of London: *February 5th*, 1896.—Prof. Raphael Meldola, F.R.S., President, in the Chair.

The President announced that he had nominated Dr. D. Sharp, F.R.S., Mr. Roland Trimen, F.R.S., and Mr. Walter F. H. Blandford, Vice-Presidents for the Session 1896—1897.

The Rev. John Hocking, M.A., of Copdock Rectory, Ipswich, and Mr. J. C. Moberley, M.A., of 9, Radstock Place, Southampton, were elected Fellows of the Society.

Mr. Waterhouse exhibited pupæ and portions of pupæ of a silk moth, *Antheræa Mylitta*, selected from some scores of specimens, which he had opened to see if they showed stages of development agreeing with the examples given by Dr. Spüler. The results appeared to confirm Dr. Spüler's researches; some specimens showed the tracheæ, the median vein having two branches, very rarely emitting a third branch in the direction of the radial. Other specimens had faint indications of the veins and of the discoidal spot of the imago. Mr. Merrifield, Mr. Hampson, and Dr. Sharp took part in the discussion which ensued. Mr. E. E. Green remarked that in the Trans. Ent. Soc., 1881, page 601, there was a short paper by the late Prof. J. O. Westwood, describing a curious little insect from Ceylon under the name of *Dyscritina longisetosa*. Prof. Westwood believed his typical specimens to be immature. Mr. Green exhibited what he supposed to be a later stage of the same species. He said his example differed in some particulars from Westwood's description and figure—notably in the proportions of the caudal appendages. Prof. Westwood pointed out the affinities of *Dyscritina* to the *Forficulidæ*. These were very apparent in the specimen under consideration. Putting aside the nature of the caudal appendages the insect was in all particulars an earwig. The present specimen was taken in the Punduloya district of Ceylon, at an elevation of about 4,000 feet. Mr. McLachlan, Dr. Sharp, Mr. Gahan, Mr. Blandford, and Mr. Hampson made some remarks on the subject. Mr. O. E. Janson exhibited a Goliath beetle, from the Upper Congo, which he believed to be the male of *Goliathus russus*, Kolbe, described from a unique female example in the Berlin Museum. Mr. Blandford called attention to the case of the eye of a boy affected with inflammation caused by the hairs of the larva of *Lasiocampa rubi*. He said that the urticating property of the hairs appeared to be mechanical: there was no evidence of any poison glands. Mr. Lawford said he had had some difficulty in discovering hairs in the lid, and he thought that the symptoms in the case in question were not to be explained by mechanical irritation alone due to the presence of hairs in the tissues. The subject was a new one to him, and he had looked up all the medical literature bearing on it. Lord Walsingham, Mr. Tutt, Prof. Poulton, Canon Fowler, and Mr. Jacoby made some remarks on the subject. (*cf.* Ent. Mo. Mag., 1895, pp. 179–180, Eds.). Dr. F. A. Dixey read a paper, entitled, "On the Relation of Mimetic Patterns to the Original Form." The paper was illustrated by a number of coloured diagrams. Prof. Poulton expressed his gratification with the paper, and that the Hope Collection under his charge had afforded material for the work. He thought the result of the paper was to give support to the theories of Fritz Müller rather than to those of Bates. Mr. Blandford, Mr. Tutt, and Prof. Meldola continued the discussion. Dr. Sharp contributed a paper, entitled, "The Rhynchophorous *Coleoptera* of Japan. Part IV."—H. Goss and W. W. Fowler, *Hon. Secretaries.*

SUPPLEMENT TO "A SYNOPSIS OF BRITISH *PSYCHODIDÆ.*"

BY THE REV. A. E. EATON, M.A., F.E.S.

(*Continued from vol.* vi, *page* 250).

Section II of Pericoma; British species, Nos. 8—15 (excl. No. 12, —transferred to the 1st Section); Algerian, Nos. II—VI.

Affinities with the preceding Section.

Refer (imago) *ante*, 2nd ser., vol. iv, p. 32, step 3*a*; pp. 122—3; vol. v, pl. ii, figs. P. 8—15 (excl. No. 12 and P. 12) [details]. Also (larva and pupa) *P. canescens*, No. 9, post.

This Section, like the 1st, may be ranked as a Sub-genus. It comprises two series of species characterized by differences in the arrangement of the endings of the bristling hair on the pobrachial and postical nervures. The nervures upon which such hair is found are the same as in *Ulomyia*, and the former Section. Analogous differences in the bristling hair of the radius and cubitus taken into consideration (tacitly or expressly) with features of the ♂ antennæ and superior ♂ genital appendages, serve for subdivision of the series. The antennæ are 16-jointed in both sexes of all the species.

Classification of Species of the 2nd Section of Pericoma.

A. Wing broadly ovate; apex rounded between the cubitus and the præbrachial nervure; the endings of the bristling hair on the pobrachial branches and postical nervure in a re-entering angulate line with one another; the ending of the same hair on the anterior radius less or not farther advanced than its ending on the cubitus.

a. Bristling hair extending farthest upon the anterior radius and cubitus, and not quite so far on the posterior radius. Third joint in the ♂ antenna longer and narrower than the 2nd, and provided above on the outer side with a longitudinal row of long spreading spinules or setulæ. Superior ♂ genital appendages, viewed from the side, subglobular in appearance... Species Nos. II, Alg.; 8, Brit.

aa. Bristling hair extended farthest upon the posterior radius and anterior pobrachial, but very nearly as far on the cubitus; much less extended on the anterior radius. Third joint in the ♂ antenna narrower and barely longer than the 2nd, and provided (in addition to a few subappressed scales) with an incomplete verticil of long wide-spreading hairs. Superior ♂ genital appendages, *ante*, 2nd ser., vol. iv, p. 122, step 3*a*; vol. v, pl. ii, P. 9..Species No. 9, Brit.

aaa Bristling hair extended farthest upon the cubitus; its endings on the radial branches subopposite each other. Third joint in the ♂ antenna shorter than the 2nd, and provided with an incomplete verticil of hair spreading widely on one side. Superior ♂ genital appendages *op. cit.*, pl. ii, P. 10. ....Species Nos. III, Alg.; 10, Brit.

B. Wing narrower, elongate-ovate; apex subacute or rounded between the cubitus and the præbrachial nervure; endings of the bristling hair on the pobrachial branches and postical nervure either in an oblique straight line or hardly perceptible salient curve with one another; those on the radial branches less or not farther advanced than that on the cubitus, which is the outermost. Antennæ in the ♂ similar in construction to those of No. 10, Brit. (described above), but with the first three joints subequal in length to one another.

b. Endings of the bristling hair on the radial branches opposite each other, and a little less advanced than its ending on the cubitus... Species Nos. IV, Alg.; 11, Brit.

bb. Endings of the bristling hair on the radial branches either in a straight line, or slightly salient curve, with its ending on the cubitus... Species Nos. V and VI, Alg.; 13—15, Brit.

8. PERICOMA NEGLECTA, Etn.

P. neglecta, *ante*, 2nd ser., vol. iv, p. 122; vol. v, pl. ii, P. 8*a* (details).

First and 3rd joints in the ♂ antennæ each much longer than the 2nd joint, clad very densely with scales, and furnished in addition with long flattened hairs that spread a little beyond their extremities; 1st joint obovoid, slightly compressed, broader than the 2nd, which is globose; 3rd joint elongate-oval, narrower than the preceding, and provided above on the outer side with three long spreading spinules in a longitudinal row inserted respectively, one close to the base, and two nearer together towards the apex of the joint. The remaining joints moniliform, with hairs only, in verticils that attain their greatest amplitude at the 5th joint; some of them with a pair of slightly curved, subulate or linear-lanceolate, articular appendages inserted not quite midway between the verticil of hairs and the end of the joint; 4th joint inserted at the extremity of the 3rd joint; 4th—11th joints subacutely ovoid, not beaked; 12th—15th joints oval, in close contact with the 16th which is bulbose. Outer limits of the region of bristling hair on the wings light coloured, skirted from the radius to the anal nervure by a narrow greyish fascia, with which are confluent the markings of the same tint within the region, that are unruffled; the fascia in its turn separated from the dark streaks at the terminations of the nervures by a narrow space of the lighter colour extending to the wing margin in their intervals.

Without close examination it is difficult to distinguish this species from the next. *P. neglecta*, however, is slightly greyer on the wings than *P. canescens*; the hair-streaks at the endings of its wing-nervures are less strongly marked; and in the greyish fascia beyond the bristling hair, which is zigzag, the re-entering angle at the posterior pobrachial is much deeper than that at the posterior radial nervure. Under a weak lense, a small dark hair-spot is distinguishable by each of the forks, and another, less distinct, by the end of the anterior basal cell; and these render it possible that the specimen labelled *canescens* in Winthem's cabinet, and that labelled *punctum*, Megerle MS., in the Vienna Museum (upon which Schiner based his assignment of the name to sp. No. 9 of this Synopsis), might really have belonged to the present species instead of to the next. Meigen's description of the legs of *Ps. canescens* is unsuitable to both of these species.

9. PERICOMA CANESCENS (Meigen,† part. ?), Schiner.

P. canescens, Schiner, Fn. Aust. Dipt., Bd. ii, 634 (1864); v. d. Wulp, Dipt. Neerland., i, 316, pl. ix, 14 [neuration ♀] (1877); Etn., *ante*, 2nd ser., vol. iv, 122, and vol. v, pl. ii, P. 9 (details); Miall and Walker, Trans. Ent. Soc. London for 1895, p. 142 (larva), p. 146 (pupa), pls. iii and iv (life-history).

First joint in the ♂ antennæ subcylindrical, in length subequal to the 2nd, which is subglobular and, perhaps, the stouter—both of them densely squamose and provided with some spreading hairs; 3rd joint only very little longer, and not half the width of the 2nd, fusiform-ovoid, with a few subappressed short scales and an incomplete verticil of long, wide-spreading hairs not much inferior to the widest verticils in amplitude; the remaining joints very much as in *P. neglecta*. The narrow greyish fascia skirting the outer limits of the bristling hair of the wing has somewhat the form of a capital V.

None of the British *Psychodidæ* to which Meigen's description of the wings of *Ps. canescens* can be supposed to apply have legs corresponding in colour with the remainder of his description—white, with the last two tarsal joints black-brown. Unless, therefore, the species be unknown to modern entomologists, it is probable that in drawing up his diagnosis Meigen referred to more than one specimen, and that the specimens were not all of one species. The legs described may have been those of a *P. palustris* or *P. mutua*.

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† *Trichoptera canescens*, Meig.,* Klassif. d. zweifl., Bd. i, 45 (1804).—*Psychoda (punctum*, Megerle MS.) *canescens*, Meig., System. Beschr.* [ed. i], i, 106 (1818); *id., op. cit.* [ed. ii], i, 84 (1851).

Schiner has explained (*loc. cit.*) the reasons that guided his choice of the species to which the name *canescens* has been appropriated. This is not the species thus named by Haliday in Walker's Ins. Brit. Dipt., vol. iii, p. 254, line 29, = *P.* (*auriculata*, Curt.) *fusca*, Macquart; nor *id.*, *op. cit.*, p. 258, No. 5, = *P. notabilis*, Etn. Neither is it the *P. canescens* of Verrall's List of Brit. Dipt., p. 10 (1888), = *P. decipiens*, Etn.,—*fide* Verrall's cabinet.

10. PERICOMA EXQUISITA, Etn.

P. exquisita, *ante*, 2nd ser., vol. iv, 122, and vol. v, pl. ii, P. 10 (details).

The ♂ antennæ in this species differ from those of *P. canescens*, chiefly in the absence of hairs on the first two joints, and in the 3rd joint being ovoid and shorter by one-fourth than the 2nd joint. Articular appendages of the flagellum short Pubescence of the notum reddish-brown.

Within the region of bristling hair, the dark fascia across the bases of the nerve-forks is much broader in its anterior half than behind, and at the anal nervure it is parted in two, opposite the flaxen hair-spot (partly composed of bristling hair) at the end of the axillar nervure; its interior border from the radius to the inner margin is deeply (almost semicircularly) concave, and passes by two conspicuous opposite black spots placed one at the anterior fork, the other close to the posterior fork on the posterior pobrachial branch and the postical nervure; its outer border, sharply zigzag, is connected with the dark apical region at the præbrachial nervure. The flaxen bristling hairs at the outer limits of the ruffled hair are skirted externally by other hairs of the same colour ascending outwards in two divergent ranks from each nervure.

The colour of the thoracic pubescence, the more strongly marked flaxen spots at the ends of most of the nervures, and (on close inspection) the black spots by the forks, serve to distinguish this species in the net from the following. In latitude its geographical range is considerable; Mr. King met with it at Loch Maree (4 ♂, 5 ♀), and a single male has been taken in Algeria, this year (1895).

11. PERICOMA FALLAX, Etn.

Pericoma fallax, *ante*, 2nd ser, vol. iv, 122, and vol. v, pl. ii, P. 11 (details).

Within the region of bristling hair, the dark fascia across the bases of the forks, broad and subtransverse in its anterior half, tapers posteriorly much less than in *P. exquisita*, and is deflected outwards at the anal nervure without isolating any of the flaxen hairs at the end of the axillar; its interior border, from the radius to the anal nervure is almost transverse, opposite the median angle of its zigzag or W-like outer border, which is confluent along the præbrachial nervure, in the usual manner, with the dark apical region; the dark hairs about the forks do not constitute conspicuous spots, but match in tint the remainder of the fascia.

Antennæ in the ♂ blackish, with dark grey hair on the flagellum; scales on the scape dull yellowish-brown. Palpi blackish, "shot" with glossy greyish. Pubescence of frons, vertex and body, dull yellowish-brown, "shot" at the tips of the hairs on the thorax with grey or blackish.

Probably a common species, like *P. exquisita*, in England. In Scotland, Mr. King captured it at Loch Lomond (May, 1889: 1 ♂, 1 ♀) and Loch Maree (June and July, 1890: 3 ♂, 3 ♀).

13. Pericoma blandula, Etn.

P. blandula, *ante*, 2nd ser., vol. iv, 123, and vol. v, pl. ii, P. 13 (details).

Within the region of bristling hair, the dark fascia across the bases of the forks is formed as in *P. fallax*; it is joined along the præbrachial nervure to the dark apical region, as in *P. trifasciata*, without any break; the further broad interrupted band of whitish bristling hairs is immediately succeeded by the dark apical region, without any outward-pointing whitish hairs intervening. Pubescence of the thorax and abdomen brownish-grey. In fig. P. 13, *a*, *d*, the beak of the superior ♂ genital appendage is defective, owing to an accidental overlapping thereabouts of the tracings photolithographed. The length of the beak should be seven-ninths the length of the bulb.

Worn and faded specimens of *P. blandula* are very liable to be assigned to *P. gracilis*, if the white space in the posterior fringe of the wing is nearly effaced; they may also be confused with *P. fallax*. On the other hand, prime specimens of *P. blandula* have a very close resemblance to newly emerged examples of *P. trifasciata*, with the whitish space in the fringe interior to the end of the axillar nervure obsolescent or undeveloped. Where individual males are in question, the differences in the length of beak in the terminal joint of the superior genital appendages, or in the form of the joint as a whole, are of great assistance in discrimination between these species. Females past their prime are best left alone.

14. Pericoma trifasciata, Meigen.

Trichoptera trifasciata, Meig.,* Klassif. d. zweifl., Bd. i, 44, tab. ii, 20 (1804).—*Psychoda trifasciata*, Lat., Gen. Crust. et Ins., iv, 251 (1809); Meig.,* System Beschr. [ed. i], i, 105, tab. iii, 18 (1818); *id.*, *op. cit.* [ed. ii], i, 83, tab. iii, 18 (1851); Zet., Dipt. Scand., ix, 3703 (1850).—*Pericoma trifasciata*, var. *β*, *dealbata* (Hal., MS.), Walk., Ins. Brit. Dipt., iii, 259 (1856); (*trifasciata*) Etn., *ante*, 2nd ser., vol. iv, 123; and vol. v, pl. ii, P. 14 (details).

Within the region of bristling hair, the dark fascia across the bases of the forks is united to the dark apical region along the præbrachial nervure without a break; the further interrupted fascia of bristling whitish hair (which in *P. blandula* is broad, and subtransverse in direction) is narrower and saliently angulate, with the point just in front of the interruption; the dark apical region extends to the extremity of the wing's disc, and its inner margin is slightly concave or subtruncate. The dark hairs by the forks in the fascia first referred to hardly constitute black spots. Costal fringe impure whitish from the base to nearly opposite the bifurcation of the radius in the ♀, but scarcely so far in the ♂; also whitish, at least in its upper layers, at, and for a short distance on both sides of the end of the subcosta; and again, in the ♀, by the end of the anterior radius the dark fringe is often overlain by some whitish hairs spreading outwards. At the posterior margin of the wing, small outward spreading tufts of the same whitish hair are arranged interior to the fringe at the ends of the anal, postical, and posterior pobrachial nervures; and sometimes in transmitted light the dark hair-streak at the ending of the postical nervure appears in consequence to be almost isolated.

In the foregoing citation of Meigen, Syst. Beschr., Bd. i, tab. iii, 18 (1851), its assignment to *Ps. palustris* in the descriptive text, *op. cit.*, p. 83, is treated as a *lapsus calami* on Meigen's part, on the supposition that the figure is a reproduction of the one published in 1804 of *P. trifasciata.* Comparison of good specimens of both these species with the descriptions and the figure in question, supports this correction—making some allowance for the artist. Zetterstedt's mention of the apical fascia, *op. cit.*, 3074, "*intus fere truncata*," designates the present species; and the number of blackish joints in the tarsi of Haliday's var., *dealbata*, governs its synonymy.

The locality whence Haliday's var. γ, *deaurata* (*loc. cit.*) was obtained is suggestive of its being possibly *P. exquisita*; but "flavido-hirta" seems too bright a colour for this species, and besides that, the white fasciæ in its wings do not enter the fringes.

15. PERICOMA PULCHRA, Etn.

P. trifasciata, Hal. MS., Walk, Ins. Brit. Dipt., iii, 259 (1856), excluding vars.—*P. pulchra*, Etn., *ante*, 2nd ser., vol. iv, 123, and vol. v, pl. ii, P. 15*a* (detail).

Within the region of bristling hair, the dark fascia across the bases of the forks is saliently angulate and cuspidate at the præbrachial nervure, and its cusp is almost or quite cut off from the dark apical region by the outer zigzag fascia of whitish bristling hairs and some outward spreading whitish hairs therewith associated, their connection (if maintained) being only established by a few oblique dark hairs posterior to the point of the cusp that just meet the edge of that region on the anterior pobrachial nervure. The same dark fascia, of moderate width from the costa to the cubitus, and narrow from the præbrachial to the postical nervure, expands posteriorly to attain its greatest width in the posterior fringe; the hairs in proximity to the forks are not darker than the remainder. The dark apical region extends to the extremity of the wing's disc, and its inner margin is sharply indented between the cubitus and the præbrachial nervure; within it all the hairs at the endings of the nervures are of a dark colour. Costal fringe black from the posterior radius to the subcosta, and again at the anterior end of the dark transfurcal fascia, which expands in it slightly. The innermost or basal dark fascia does not enter the costal fringe, and is hastate, with the cusp on the pobrachial stem not produced to the median dark fascia.

This species is easily distinguished from the preceding by the number of blackish joints in the tarsi, and by the different form of its superior ♂ genital appendages. It is not represented in Walker's collection in the British (Natural History) Museum.

(*To be continued*).

NOTES ON THE LIFE-HISTORY OF *LYCÆNA ARGIOLUS*.

BY R. M. PRIDEAUX.

A female of this species was captured in the neighbourhood of Carisbrooke, Isle of White, on August 7th, and confined in a glass cage containing sprays of immature ivy-bloom, together with some flowers of *Eupatorium cannabinum*, on which I had observed the butterflies to feed, in nature.

Three days later a few eggs were deposited on the ivy-stems, at the base of the flower-umbels, and on each of the ensuing three days more eggs were laid, the same situation being almost invariably chosen. Then the insect ceased laying, and, although she lived for 15 days longer, no more ova were obtained.

The egg resembles that of *L. Corydon* and others of the genus, and is circular, flattened, and slightly concave towards the centre, in colour a translucent greenish-white. What renders it such a beautiful microscopic object is the raised network pattern which covers the entire surface except a small central area. The "mesh" is larger at the equator, and at each point where the lines converge is a prominent glassy tubercle. The eggs hatched in from three to five days after being deposited; the young larva is cylindrical at first, with long white hairs pointing backwards; after a few meals, and before the first moult, it becomes stouter in the middle, and soon assimilates to the usual *Lycænid* shape. All the larvæ in their earlier stages were of a uniform pale green colour; the pink markings on the sides and dorsal area which some specimens developed, did not appear till they were half-grown. A hole is gnawed in the centre of the egg, but the rim is left entire, nor is the shell subsequently eaten, a fact which I found afterwards greatly facilitated the capture of the larva in nature. The method of feeding is peculiar, and the same throughout the entire larval period, but is seen to the best advantage in the adult larva. A small, circular hole is drilled in the side of an unexpanded corolla of the ivy-flower, the petals are not further eaten, but an entire clearance of the inside of the bud is made, the larva protruding its long, retractile neck leech-like into the interior of the bud while the 3rd ridged segment seems firmly glued to the side of it. The stamens being consumed, the corolla soon becomes an empty bag under the caterpillar's persistent though unseen ravages. It is noteworthy that no attempt on the larva's part is ever made to enter the bud entirely, even when quite young, but if unable to effect an entire clearance from the first vantage ground, a fresh hole is gnawed for this purpose, opposite to the first. The frass is at first black, but is yellowish while the stamens are being eaten. The first two moults are effected on the flower-umbel itself, but for the subsequent ones the larva descends a few inches down the stem, on which a few threads are spun, to which it attaches itself; the cast skin appears pure white.

In the locality where specimens of *L. Argiolus* had been observed, ivy was by no means abundant, and it seemed well worth while to have a search for the butterfly in its early stages, on such bushes as could be examined. Bearing in mind the position of the egg as laid in captivity, I began to examine the base of the umbels, one by one, by turning them back, and was soon rewarded by the discovery of a single empty egg-shell. On closer search, a tiny larva revealed its presence on one of the pedicels just above. At this stage the larva resembles with wonderful fidelity the small concave branches which occur at the base of each pedicel on the umbel. This fact alone renders the changing of their food, when in captivity, anything but an easy matter, so readily are they overlooked.

More eggs-hells were subsequently found, always laid in the same place, and rarely two on one umbel, though three were recorded in one instance. All were discovered on the north-easterly side of the bush, a fact that may be accounted for by the persistent and violent westerly winds that had prevailed earlier in the month, when the butterflies were flying. When older, the presence of the larva is readily evidenced by the appearance of its frass, some of which is apt to cling round the stellate hairs which cover the young buds, also by the fact that such of the latter as have afforded a meal to the larva have a habit of opening prematurely, discovering the empty corolla. The larvæ are very sluggish, and it would appear that one good-sized umbel affords one sufficient nourishment until pupation. They feed indiscriminately, by night or by day. When, towards the end of their larval existence, the expanded ivy-blooms were offered to them, it was found that these were neglected for the unopened buds.

With regard to the food of the earlier brood in this locality, it cannot have been holly; this shrub being entirely absent, the nearest being in Parkhurst Forest, more that a mile away, and here not abundant.

Probably the Dogwood (*Cornus sanguinea*) was the substitute in this instance, *Argiolus* having been known to feed on the flowers of this bush, which abounds where the butterflies were met with later.

I suspect there are many blossoms which offer a possible food for the larva. I have myself tried those of the clematis and found that they took to it readily, usually ascending the filament of an immature stamen, and rifling the still moist pollen-sacs. This food failed them soon, however, the blossoms being over, as a rule, by the middle of August, when the larvæ are just hatching.

I see that Freyer is an authority for *Erica* as a food-plant for *Argiolus.* I have certainly seen the butterfly on the open heaths on Dartmoor at considerable distances from any hedge or woodland.

From the 9th to the 20th September my larvæ were full-fed ; a few were then of a plain light green colour, most were marked with pink on the back and sides ; in a few cases there were a double row of pink dashes on the 3rd, 4th, and 5th segments on the edge of the dorsal ridges, with a median interrupted line of pink on the remaining segments. When full-fed, all the larvæ changed to a dull, livid pink colour, this change being effected in the course of a few hours ; they then shewed a disposition to descend the sprays of ivy, and it was found that a few ivy leaves scattered over the bottom of the cage afforded them suitable conditions for pupation. The larva spins a small mat of silk in the concave side of an inverted ivy leaf, a pretty strong silken girdle is made, which fits into the hollow between the pupal thorax and abdomen ; this, with the anal support, securing it firmly, its face to the leaf. The pupa, of a rounded dumpy shape, reminds one of that of *C. Phlæas ;* it is of an ochreous tint, dashed and blotched with brown.

On September 30th, owing, I suppose, to the unusually warm season, a ♀ specimen of the butterfly emerged ; the rest of the pupæ, some thirty in all, are hibernating, and seem, to all appearance, perfectly healthy. The exquisite condition of the bred specimen, with uninjured cilia, so rarely seen in captured ones, alone renders this butterfly well worth the trouble of rearing.

Buckhurst Hill, Essex :
January 12*th*, 1896.

DESCRIPTION OF A NEW SPECIES OF BORNEAN *LYCÆNIDÆ.*

BY HAMILTON H. DRUCE, F.Z.S., F.E.S.

Lehera Anna, *sp. n.*

♂. *Upper-side* : fore-wing bright reddish-brown, deepening to brownish-black along the outer margin, which is broadly darker ; costal margin and base blackish-brown. Hind-wing black ; anal half pure white ; a dull black spot in the lobe partially covered with green scales, a patch of greyish scales between the lower median nervule and the sub-median nervure, and a black spot between the two lower median nervules. Tails pure white. *Under-side* bright dark green ; inner margin of fore-wing white ; the white projecting upwards rather beyond the middle, and ending in a linear row of irregular decreasing spots about the upper median nervule. Hind-wing with the white anal area rather less extensive than on the upper-surface, and with a submarginal row of green crescent-shaped lunules from the apex to the lobe, where the lunule becomes confluent with a quadrate green spot. A large deep black spot occupies the whole of the lobe, and at its outer extremity is dusted with white scales. About the middle of the wing is a white, much broken, line, much as in *L. Eryx*, L., but more linear.

The cilia on both surfaces is of the same colour as the adjacent portion of the wings.

Head and frons bright green; thorax and abdomen brownish above, reddish-buff colour below; palpi bright green with black tips; legs blackish. Antennæ black, white ringed, with reddish tips. Expanse, 2$\frac{3}{5}$ inch.

Hab.: Kina Balu, N. Borneo (type, Mus. Staud.).

This fine species is allied to *L. Eryx*, Linn., but has many differences. It is remarkable for its enormous size. I am indebted to Dr. Staudinger for the pleasure of describing this insect, which was sent to him by his collector, Watersbradt. He writes me that it is unique.

This genus is, I believe, recorded here for the first time from Borneo, and I hope before long to be able to publish a figure of the type.

The Beeches, Circus Road, N.W.:
February 28th, 1896.

CONCERNING *SOLENOBIA TRIQUETRELLA*, &c.

BY T. A. CHAPMAN, M.D., F.E.S.

Mr. Barrett has kindly allowed me to examine the pupa-cases and moths (three females dried on card) from the collection of Mr. Sidebotham, that he considers to be the true *S. triquetrella*. The moths are not in condition to be easily examined, but, luckily, an antenna and a leg or two are well displayed. They agree with *Solenobia* in the form of the case, and in the extrusion of the female pupa-case for emergence.

The pupa-cases are not distinguishable from those of *inconspicuella*, at least not on such examination as is permissible with reference to retaining the present aspect of the specimens.

The moths also agree absolutely with *inconspicuella* in two characters, which are the most definite to observe in these apterous species—the number of joints of the antennæ and tarsi. How far these characters are specific or generic I must have much wider experience to determine; it may, therefore, very well be that *Solenobia inconspicuella*, *S. triquetrella* given me by Dr. Wood, and Mr. Sidebotham's *triquetrella* are three distinct species, and the identity I observe is characteristic of all true *Solenobiæ*. These three forms, supposed to be distinct species, but possibly all one species, each have sixteen joints in the flagellum of the antenna, and four joints in the tarsi.

Solenobia conspurcatella has only nine joints to the flagellum of the antenna, and only three joints to the tarsi; whether this is a specific distinction, or entitles it to a place in another genus, is unknown to me from the ignorance I have just referred to. The males of *inconspicuella* and *conspurcatella* have the usual five joints to the tarsi. I have seen no males said to be *triquetrella*.

Talæporia pseudo-bombycella, ♀, has five tarsal joints, and twenty-five joints in the flagellum.

Fumea intermediella, ♀, has also five joints to the tarsi, but only twelve joints to the antenna; neither of these pupæ emerges from the case.

Firbank, Hereford:
January, 1896.

Supplementary note to my remarks on the distinctness of larval and pupal instars.—It would seem that diminished nutrition was not commenced before a certain amount of change towards the pupal state had occurred, and this could not be undone; possibly had the diminution of nutrition been begun earlier, as in the preceding skin, the further larval instar would have been of a completely larval character. The actual amount of change towards the pupa that exists in these larvæ would no doubt repay analysis, from several points of view, as, for example, the relative fixity of different larval and imaginal structures. Could we, for instance, correlate the perfectness of the mandibles, and the change in the antennæ and maxillæ, with the fact that the earliest *Lepidoptera* (*Eriocephala*) possessed imaginal jaws, and the next earliest (*Micropteryx*) still retained them in the pupa.—T. A. Chapman, Hereford: *February*, 1896.

[This arrived too late for incorporation with the original article at pp. 54-57 *ante*.—Eds.].

QUEDIUS RIPARIUS, Kellner: A SPECIES NEW TO BRITAIN.

BY W. G. BLATCH, F.E.S.

During a visit to Porlock last month, I found a *Quedius* which I at once recognised as being new—at least to Britain—and not finding in Erichson's "Gen. et Spec. Staphylinorum" (the only continental work on the subject in my possession) any description that would fit it, I sent specimens to Mr. G. C. Champion, who pronounced them to be *Quedius riparius*, Kellner.

This beetle is very beautiful, and amply distinct from all other British species. Of course I had the usual hope that my insect might possibly prove to be amongst the hitherto unknown, this pretty little bubble, however, soon burst, and I must be content to refer my beetle to a description already formulated, but which I have not yet seen. It must suffice, therefore, to indicate such characters as will enable British collectors to identify the species—when they succeed in finding it.

Quedius riparius belongs to the *Sauridus* group, near *Q. maurorufus.* In shape it is fusiform, slender, the abdomen tapering almost to a point. It is black, the head and thorax being very shiny, with the faintest possible tinge of green when viewed in certain lights; elytra long, widest behind, the rather dense punctuation and pubescence giving them a dull appearance; abdomen iridescent (varying somewhat in different specimens), pubescent, the pubescence being thicker and paler at the base of each segment, and forming a triangular patch on either side (arranged much the same as the golden pubescence on the abdomen of *Q. auricomus*), all these parts being furnished with strong outstanding black setæ; antennæ pitchy-black, rather long and slender, the second joint much shorter than the first and third, the four following joints much—and the next three slightly—longer than broad, the terminal joint about one-third longer than the penultimate, the basal half of the second, and the base of the following four or five joints testaceous; legs pitchy-black, knees and tarsi lighter, the anterior tarsi strongly dilated in both sexes. Male with seventh ventral segment deeply, triangularly emarginate, female with the same part sharply but not nearly so deeply incised. Length, 6—7 mm.

This interesting addition to our list of *Quedii* lives on the margins of the swift waters (as they are called locally) flowing from the hill-country in the neighbourhood of Porlock, and is apparently scarce. After finding the first specimen, I devoted nearly all the rest of my time to hunting up others, and after six days' hard labour secured only fourteen—enough to give the species a firm footing in our lists, but not sufficient to enable me to supply all my friends, as I should like to do. It seems to me highly probable that this beetle may be found throughout the Exmoor district.

Mr. Champion informs me that *Q. riparius* is found in similar situations in the Thüringer-Wald in Germany, and in the Alps and Pyrenees, and that it does not seem to have any very close allies on the continent.

Knowle, near Birmingham:
March 9th, 1896.

TRIBOLIUM FERRUGINEUM (FABR.).

BY G. C. CHAMPION, F.Z.S.

At the request of M. Fauvel I recently examined the type of *Tenebrio ferrugineus* of Fabricius [Spec. Ins., i, p. 324 (1781)—hab., Africa æquinoct.), still preserved in the Banksian collection at the British Museum, and to my astonishment it proved to be totally unlike a *Tribolium*, to which genus it had been referred by all modern authors, and was evidently a Cucujid, near *Pediacus* and *Xenoscelis*. My examination of the specimen has stimulated Mr. C. O. Waterhouse to clean the insect, and publish a description of it [*cf.* Ann. and Mag. Nat. Hist. (6), xvii, pp. 230, 231 (March, 1896)]; he also refers it to the Cucujidæ. I would observe that he might have gone a step further and suggested a generic name for it! Mr. Waterhouse remarks that "the insect so long known in our collections as *Tribolium ferrugineum*, Fabricius, will of course have to bear a different specific name." This is by no means certain, as the *Tenebrio ferrugineus* of his "Mantissa Insectorum," or his *Trogosita ferruginea*, may quite well refer to the species known to us as *Tribolium ferrugineum*. In Fabricius's descriptions of *Tenebrio ferrugineus* [Mant. Ins., i, p. 212 (1787)—hab., Halle, Saxony], *Trogosita ferruginea* [Ent. Syst., i, p. 116 (1792)—hab., Africa æquinoct. et Americæ Insulis], and *Trogosita ferruginea* [Syst. Eleuth., i, p. 155 (1801)—hab., India utraque: destroying preserved museum specimens, and also in bread], no reference whatever is made to his original description in the "Species Insectorum." It is perfectly evident that he confused more than one species under the name *ferrugineus*, and till the contrary is proved, the name *ferrugineus* (1787) can be retained for the *Tribolium*.

Dermestes navalis, Fabr. [Syst. Ent., p. 56 (1775), and Mant. Ins., i, p. 35 (1787)], from New Zealand, is given in the "Munich Catalogue" as a synonym of *Tribolium ferrugineum*: the type of this insect is stated to be in the Banksian collection, but it cannot now be found. Fabricius, in his third description of this species [Ent. Syst., i, 2, p. 504 (1792)], refers it to *Lyctus*, and gives the antennæ as having the last two joints thickened: this character proves that the insect cannot be that known as *Tribolium ferrugineum*, in which the antennæ have the last three joints thickened.

Ips testaceus, Fabr. [Ent. Syst., Suppl., p. 179 (1798)], from the East Indies, is described as having the antennæ "articulis tribus perfoliatis;" it is sunk by Fabricius himself (Syst. Eleuth., i, p. 155) as a synonym of *Trogosita ferruginea*.

Dr. Seidlitz [Naturg. Ins. Deutschl., v, p. 583 (1894)] adopts the name *Tribolium navale* for the species; but, as I have shown above, it is more than doubtful if the description of the New Zealand insect was made from a specimen of the so-called *T. ferrugineum*.

Horsell, Woking:
March 7th, 1896.

SINGULAR MONSTROSITY IN A DRAGON-FLY.

BY ROBERT McLACHLAN, F.R.S., &c.

Early one dark morning last week I was occupied in preparing some Dragon-flies recently received from Venezuela, and which had been placed in the relaxing box in the original papers. One *Hetærina* ♂ (*H. occisa*, Hag.) was apparently very intractable, as I could not induce the four wings to resolve themselves into pairs on the setting board. At first I attributed this to one wing on the right hand side having become crossed over to the left (a not uncommon kind of experience in setting dragon-flies sent in paper envelopes, and often due to the pin being badly inserted). At length the insect was removed from the board, and an examination revealed a very singular instance of monstrosity, which accounted for the intractability. On the *left* side are *three wings*, *two mesothoracic* and the other metathoracic. On the *right* side only *one wing*, *and that metathoracic*; the muscular wing-attachments on the mesothorax are present, but with no rudiments of the wing itself. The insertion of the supplementary anterior wing on the left side is at a point almost immediately beneath, and slightly inferior to, that of the normal wing. The normal anterior and posterior wings on the left side, and the posterior on the right, are those of a fully mature individual, the red pigment being highly developed. The supplementary anterior wing on the left side is nearly normal in shape and neuration (the only appreciable difference being that the inner margin is slightly more excised at the base), but the pigment is not developed, the wing in that respect being similar to those of very immature examples.

Cases of monstrosity in Dragon-flies are extremely rare, and it is advisable to put all such on record when met with. Having regard to the future, it may be well to explain that in my preliminary endeavours to induce the wings to accommodate themselves to the usual position on the setting board, the normal left anterior wing became loosend at its attachments, and had to be secured by liquid glue.

Lewisham, London:
March 3rd, 1896.

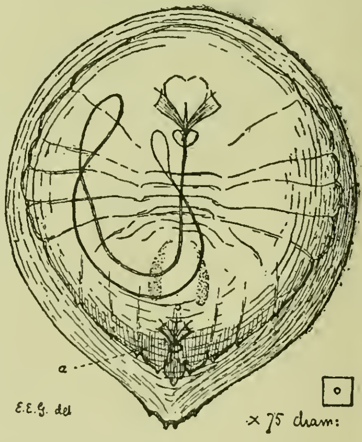
ON AN INTERMEDIATE "AONIDIFORM" STAGE IN *ASPIDIOTUS.*

BY E. ERNEST GREEN, F.E.S.

With reference to Mr. W. M. Maskell's interesting note (*ante*, p. 33) on the possible identity of *Aspidiotus perniciosus*, Comstock, and *Aonidia fusca*, Maskell, I may mention that I have observed in some species of *Aspidiotus*, at the time of the second moult, what I might call an "Aonidiform stage." The insect shrinks away from its pellicle prior to subsequent growth and rupture of its former skin. A specimen examined only in this intermediate stage would be unhesitatingly placed in the genus *Aonidia*; the supposed adult insect being considerably smaller than, and contained within, the second pellicle. I have, mounted in Canada balsam, a specimen of *Asp. secretus* (Ckll. MSS.) in this stage, from which the annexed figure was taken. The pellicle of the second stage is seen to be intact, and completely encloses the early adult insect, which subsequently increases to many times its former dimensions.

Possibly this fact may explain the similarity of anatomical detail, with difference of formation of puparium in the two insects mentioned by Mr. Maskell. In which case *Aonidia fusca*, Maskell, may be considered an immature form of *Aspidiotus perniciosus*, Comstock.

This theory might be corroborated or disproved by a close study of the life-history of *Asp. perniciosus*, which could best be effected in its native or adopted country. Perhaps Prof. Comstock or Prof. Cockerell may be in a position to settle the question.



The fact of this "Aonidiform" stage existing in some (if not all) of the species of *Aspidiotus* suggests that the genus *Aonidia* is the more primitive form.

The displacement of the mouth parts in the pellicles of the *Diaspidæ* is remarkable, especially in *Aonidia* and *Fiorinia*, where the ventral part of the skin remains unbroken. In the annexed figure the rostral apparatus of the discarded pellicle is seen near the posterior extremity (at *a*). The distension of the skin of the anterior part must be enormous.

Bearsted, Kent:
February 10*th*, 1896.

ON THE GROUPED ABDOMINAL GLANDS OF THE *DIASPINÆ*.

BY E. ERNEST GREEN, F.E.S.

Some years ago (in an interesting paper in the Ent. Mo. Mag., January, 1889, p. 190), Mr. A. C. F. Morgan drew attention to the function of the grouped glands on the terminal segment of the *Diaspinæ*. Remarking upon the general adoption of the term "grouped spinnerets" for these glands, he rightly points out that as they are ventrally situated and are altogether absent in many species, they cannot be very materially concerned with the secretion of the scale. He suggests that these organs may be "ventral salivary glands," and considers them to be in connection with the alimentary canal.

Mr. Morgan also expresses an opinion that they do not "really open on to the external ventral superficies." I think this is a mistake. That they are in communication with the surface is evidenced by the fact that their presence is almost always indicated on the living insect by an efflorescence of white powdery wax on those parts.

Mr. Morgan mentions, in corroboration of his theory, that similar glands are frequently present near the base of the oral setæ; and suggests that these represent the submaxillary salivary glands. Upon examination it will, I think, be found that such glands, when present on the thoracic region, are always grouped round the stigmatic openings, and have not in reality any direct connection with the mouth parts, which in this family are usually situated between the anterior pair of stigmata. Here also the glands are productive of a powdery secretion, the purpose of which I imagine to be the formation of a protective covering to the spiracles, freely admitting air while preventing the passage of water. Similar glandular pores occur on the stigmatic regions in the *Lecaniinæ*, accounting for the lines of white waxy matter that extend across the under-surface of the body from the stigmatic clefts.

To return to the abdominal glands: it seems to me that they are more intimately associated with the genital duct than with the alimentary canal. When present they will always be found grouped around the genital aperture, which opens ventrally, while the anal aperture is upon the dorsal surface of the pygidium. Very similar glands appear in immediate proximity to the genital orifice in many species belonging to other subfamilies and sections. They are very frequently present in *Lecanium* and allied genera, and I find them massed round the genital opening in *Walkeriana*.

Relying upon these facts I venture to suggest that the glands in question have for their function the secretion of a particular form of pulverulent wax, and that they are in some way connected with the process of oviposition. My theory is strengthened by the additional facts that the "grouped wax-glands"—as I propose to call them—are not found in the male insect, nor in immature females. If their function were digestive, as supposed by Mr. Morgan, one would expect to find these organs well developed in the earlier stages of the insect when assimilation of food is most active. What their exact use may be, or why they should be present in some species and wanting in others, are questions difficult to decide. Can the pulverulent matter serve the purpose of dusting the eggs and preventing their adherence to each other? A coating of fine powder would also protect the eggs from injury in wet weather. Certain it is that the eggs of all *Coccids* are covered with waxy particles similar to those secreted by the grouped glands.

It is a significant fact that, as far as I have at present observed (dealing with Ceylonese forms only), *those species of Diaspinæ that have no grouped glands are ovoviviparous, whilst those in which the wax-glands occur are strictly oviparous.* Of fourteen species of *Aspidiotus* I find that nine are possessed of grouped wax-glands and lay eggs, while five species are glandless and produce living young. I have four species of *Aonidia*—all without the glands—and in all the embryo is fully developed before extrusion. The species of *Mytilaspis* occurring in Ceylon are amply provided with grouped glands, and deposit large numbers of eggs. In *Diaspis* the same conditions occur. In *Fiorinia* three oviparous species are provided with glands, and one ovoviviparous insect is without them. The same rule holds good in *Chionaspis*, with the doubtful exception of *Ch. biclavis*, Comst. It would help to elucidate the question if other Entomologists interested in this group of insects would record the result of observations of a similar nature.

In vindication of the proposed term "wax-glands," I would point out that in most of those forms that produce wax of a powdery nature on other parts, glandular pores of very similar structure are freely scattered over the surface of the body, and are more especially crowded on those parts that carry an accumulation of the secretion in the form of loose waxy processes—such as the *Dactylopiini* and some *Monophlebinæ*.

Bearsted, Kent:
February 17*th*, 1896.

NEW AND RARE BRITISH *DIPTERA*.

BY RALPH C. BRADLEY.

. POGONOTA HIRCUS, Zett. (new to Britain).

Whilst sweeping rushes at Blackroot Pool, Sutton Park, on June 6th, 1895, I found an example of this remarkable insect (*Cordylurinæ*) in my net. On reaching home and finding what a prize it was, I determined, if possible, to get more, and paid five visits to the same spot, and succeeded in taking about thirty specimens. The ♀ is an ordinary-looking insect, but the ♂ has a long thick wisp of hair proceeding from the genitalia and curling up each side of the abdomen, giving it a most curious appearance. A similar wisp of hair is present beneath each cheek.

The wing has three cross veins between the second and third long veins, making four cells; that of the ♀ only one cross vein.

Little appears known about this insect on the continent, Schiner giving North Sweden and Lapland as its habitat.

DICRANOMYIA STIGMATICA, Mg.

One ♂ taken at Wyre Forest, August 10th, 1894. This species, although in the British list, and one which Walker, in his "Insecta Britannica," says is not rare, seems imperfectly known, and does not appear to have been met with of late years. Mr. Verrall, who has had two or three different species sent him closely allied to this, considers my specimen to be true *stigmatica*.

DICRANOMYIA ORNATA, Mg.

I was fortunate enough to capture thirteen specimens of this handsome species at Wyre Forest, on June 25th, 1894. This is placed in the reputed section of the British list, but Mr. Verrall informs me he has seen another British example.

ERIOPTERA PENTAGONALIS, Lw.

One specimen from Cannock Chase, June 6th, 1895, and four from Sutton Park, June, 1893–4, represent this rare species. Mr. Verrall has one taken by himself many years ago.

Sutton Coldfield: *March*, 1896.

Melanism in British Geometridæ.—I propose in the following notes to supplement Mr. Barrett's remarks (Ent. Mo. Mag., vol. xxxi, pp. 198-205) on this subject.

Mr. Barrett first deals with *Tephrosia crepuscularia*, and its var. *biundularia*. This insect generally emerges on Cannock Chase about the beginning of May. The white, banded form is seldom found, I have taken it twice only; the dark form, ranging from brownish-grey to almost black, is sufficiently common, and the few specimens I have now by me all show a distinct white subterminal line. My first record of its capture is in 1883. I have beaten the larva from birch only, but unfortunately I did not know it until the imago emerged. There are certainly not two broods here, and I have never taken it earlier than April 20th (1894), nor later than June 10th (1895). This single-broodedness cannot be due to climatic causes, as the insect is double-brooded in Yorkshire.

Amphidasys betularia.—The capture of a melanic specimen of this insect (*circa* 1878) constitutes one of my earliest entomological memories. I breed a small number of this insect most years from larvæ beaten from birch on Cannock Chase, all of which have turned out to be black ones. I have three specimens of the normal form bred from odd larvæ (perhaps ten in all) found from time to time at Rugeley, a distance of two miles from the Chase, on lime and other trees, the remainder being black.

Phigalia pilosaria.—The Rev. C. F. Thornewill used to take very black specimens in Burton churchyard. I have not seen any such varieties here.

Ematurga atomaria.—Male often quite black, with a few whitish or yellow dots.

Boarmia gemmaria, = *rhomboidaria.*—A dark almost black var. of this insect is not uncommon here.

Hibernia leucophæaria.—I have taken suffused blackish specimens on Cannock Chase.

Eupithecia nanata.—Dark leaden-coloured, almost black examples are to be met with on the Chase.

Thera variata, = *obeliscata.*—Very suffused and dark examples bred from Chase larvæ.

Hypsipetes trifasciata, = *impluviata.*—This insect is extraordinarily variable on the Chase, but unfortunately very difficult to catch. Some are quite black.

H. sordidata, = *elutata.*—The dark moorland forms are those usually found on the Chase, these must feed exclusively on bilberry, sallow being conspicuous by its extreme rarity in this region. I have had to grow my own sallows to get *Tæniocampæ.*

Melanippe sociata.—I took last year on the Chase a suffused smoky var. of this insect, which I think may be considered a first step towards melanic variation ; so I am afraid I must take more notice of this pest in future.

Cidaria truncata, = *russata.*—I have taken two almost black specimens of a *Cidaria* in June, 1893, and June, 1895, which I think are to be referred to this insect. I have, however, never taken any other specimens of this insect here.

C. immanata.— Very common on the Chase ; emerges at the beginning of August. I have three suffused specimens not quite so dark as those of *truncata* mentioned above.—Richard Freer, Rugeley : *March*, 1896.

Coleophora unipunctella erroneously reputed to have occurred in Britain.—In a letter dated February 26th, 1894, the late Mr. W. Machin informed me that a few years previously he had found, in rough cases on *Chenopodium* at Shoeburyness, two *Coleophora* larvæ which, when full-fed, went on to the surface of the earth in the cage and were lost, but in the following season there emerged one imago, which Mr. Warren could not identify, but which was pronounced by Mr. Stainton to be *unipunctella, Z.* Mr. Machin referred to this moth as one of the chief treasures of his collection, and added, " I presume it is new to England, as the name does not occur in any of our lists." The specimen in question stood by itself, with a printed label " *unipunctella* " beneath it, exactly as Mr. Machin himself left it, until his collection was dispersed by auction in May, 1895, when it became the property of Mr. G. W. Bird. I have carefully compared the insect with the sets of *unipunctella* in the Zeller, Frey, and Stainton collections, and it has nothing in common with that species, which, moreover, belongs to a different group of the genus. In spite of its having been reared, it is a very obscurely-marked individual, closely allied to *laripennella*, Zett. (= *annulatella*, Tgstr.), of which species the "rough cases on *Chenopodium*" are themselves suggestive, but without having seen the larval cases which were so unfortunately lost in the breeding jar, it seems impossible to identify it with certainty. Although Mr. Machin never labelled his specimens, there can be no question that this moth is the one actually so bred by him, for no one could be more careful in such matters, and there certainly was no insect at all like *unipunctella* anywhere in his collection or boxes. Though *unipunctella* has fortunately never been introduced as British, except in the Machin sale catalogue and some printed label slips, it seems advisable to record the above facts.—EUSTACE R. BANKES, The Rectory, Corfe Castle: *February* 12*th*, 1896.

Mutilation of antennæ of Cryptophagi in wasps' nests.—During the last two or three years I have frequently received from Mr. W. H. Tuck, of Tostock, near Bury St. Edmunds, considerable numbers of *Cryptophagi* from nests of *Bombi* and wasps. I have been surprised to notice that the examples of *C. pubescens*, from wasps' nests, very frequently had their antennæ more or less mutilated, whilst those of other species, such as *C. setulosus* and *scanicus* were entire. One of the commonest mutilations was the loss of the two terminal antennal joints; not unfrequently, however, a still larger part of the antennæ would be missing. *C. pubescens* has the last two joints of the antennal club much longer than the preceding one, and in this respect it is exceptional in the genus; it seems, therefore, rather remarkable that the particular species which, in the structure of the antennæ, departs somewhat from the usual type, should also be the one to suffer mutilation.

It is not easy to see what can be the cause of the damage. Mr. Tuck suggested to me that the antennæ might have been nibbled by the wasps. But this seems improbable, partly from the extremely small size of the lost parts, and partly because it is difficult to understand why the wasps, if they felt inclined to eat any part of the insects, should have stopped short at a portion of the antennæ, and in so many cases should have done no more than cleanly cut off the last two joints. I may add that Mr. Tuck reported that all the beetles were alive when he found them. Perhaps some other collectors who have had experience with nests of *Hymenoptera* may be able to throw light upon the matter.—E. A. BUTLER, 39, Ashley Road, Crouch Hill, N.: *February* 11*th*, 1896.

Hints on Collecting Myrmecophilous Coleoptera: a correction.—In my paper on this subject (*ante* pp. 44–50), *Myrmedonia cognata*, Märk., appears to have been accidentally omitted from the list of species occurring with *Formica fuliginosa.*—HORACE DONISTHORPE, 73, West Cromwell Road, South Kensington, S.W.: *March* 5*th*, 1896.

Coleoptera from the summit of Ben Nevis.—In an interesting collection of insects from the summit of Ben Nevis made by W. S. Bruce, Esq., who is in charge of the Observatory there, were many species of *Coleoptera*, all of which deserve notice from the altitude at which they were taken. A full account of these, with some prefatory notes by Mr. Bruce, has been published by me in "The Annals of Scottish Natural History," for January, 1896. The following brief notice will be interesting to readers who have not an opportunity of seeing the full account. All the specimens, with the exception of very few, were taken above the 4350 feet level, and most actually upon the summit. The species were collected chiefly during May to September of the year 1895. The collection contained nearly 600 specimens, representing over 50 species, which were distributed as follows:—*Geodephaga*, 5 species. *Brachelytra*, 12 species, including 157 examples of *Acidota crenata*, F., and two examples of *Tachinus elongatus*, Gyll. *Palpicornia*, 3 species. *Clavicornia* included a specimen of *Silpha opaca*, L. (taken, however, at the lower station); two species of *Coccinella* (16 examples of *C. hieroglyphica*); three species of *Byrrhus*, *pilula*, *fasciatus* and *dorsalis*; and *Cytilus*. Six species of *Lamellicornia*. Five species of *Sternoxi*. Five *Malacodermata* (with 156 examples of *Dascillus*); three of the rare *Telephorus figuratus*, var. *scoticus*, and 12 examples of *T. paludosus*, Fall. Amongst the four species of *Phytophaga* was a fine series of *Donacia discolor*, Panz. A few specimens of *Rhagium inquisitor*, F., and single specimens of *Hypera Pollux*, F., and *Salpingus æratus*, Muls., pretty well complete the list. — ALFRED THORNLEY, South Leverton Vicarage, Lincoln: *March*, 1896.

Coleoptera near Cardiff.—Last season was most noteworthy for the abundance of *Bembidia*, especially in the bed of the Taff, near Llandaff. *B. prasinum* was in the utmost profusion, and also *punctulatum*: *monticola* and *testaceum* occurred very sparingly; of the latter I have taken specimens for several years without knowing what it was. Hawthorn blossom produced very little except single specimens of *Mordellistena abdominalis* and *M. brunnea*. Among species of interest were *Hister merdarius* (1), *Hippuriphila Modeeri*, *Philhydrus testaceus*, *Telephorus thoracicus*, and *Colon brunneum*. I have also to record a specimen of *Philonthus ebeninus*, var. *coruscus*, taken in 1893 at Llandaff.—B. TOMLIN, The Green, Llandaff: *March*, 1896.

Coleoptera in the early spring of 1896.—The unusually open weather we have so far experienced has been most propitious for collecting *Coleoptera*. The following notes may be of interest:—*Coprophilus striatulus* and *Acupalpus meridianus* in a sand pit, and *Megatoma undata* in a decayed willow at Epsom on January 11th. Three *Anobium denticolle* and the *débris* of *Phlœotrya Stephensi* in decayed wood in Richmond Park on the 17th. A few dead *Scolytus intricatus* with many of its larvæ in Epping Forest on the 21st. And at Ipswich *Homalota aquata* under the damp bark of a felled oak, *Hylastes obscurus* (red var.) in a pine stool, and *Othius punctipennis* and *Homalium punctipenne* in a turnip. During February I turned up *Anthrenus varius* in an old collection of *Lepidoptera*, *Scydmænus collaris* in moss, *Homalota testudinea* under stones, *Agabus paludosus*, about fifteen together under the semi-detached bark of a post standing in a running stream, where they had evidently hibernated, together with *Parnus auriculatus*. A single *Choleva cisteloides* was taken on water. At the close of the month *Priobium castaneum* and *Choleva nigricans* were not uncommon, the one in an old hawthorn stump, the other in a cave, at Peterborough. During the first fortnight of March *Hydroporus granularis, Cœlambus inæqualis, Scymnus suturalis, Rhizophagus depressus, Mysia oblongoguttata, Apion pomonæ* (is this generally taken from *Pinus sylvestris*?), *Hylastes ater*, and *Apteropeda graminis* put in an appearance in varying numbers.—Claude Morley, Ipswich: *March* 15*th*, 1896.

Mimicry in Hypera punctata, F.—While collecting in a sand pit on February 12th I came upon a most curious variety of this common Coleopteron. Throughout its colour was the exact counterpart of its surroundings, from which it was with difficulty distinguished. At first I thought the mimicry was probably caused by adhesion of sand particles, but upon examination found the pubescence to be of a totally different and much lighter colour than the usual dark brown of the type.—Id.

Wood-Naphtha as a relaxing medium for Coleoptera.—As an appendix to Mr. Blandford's note (*ante* p. 63) my own experience may not be uninteresting. On the appearance of Dr. Knaggs' paper on the subject, I brought it under the notice of my friend Mr. W. E. Brady, who remembered that he had in his possession a number of insects which had been sent to him some ten years ago from Zanzibar. As soon as convenient he tried the naphtha upon one of the butterflies, and with perfect success. We then made a division of the specimens, he taking the *Lepidoptera*, I the *Coleoptera* and *Hemiptera*, which I was able to relax and set in a most satisfactory manner, and that too in a comparatively short space of time. Both discoverer and publisher deserve well of all entomologists, more especially those who like myself have very little leisure to devote to their chosen study.—E. G. Bayford, 2, Rockingham Street, Barnsley: *March*, 1896.

[I tried wood-naphtha on some exotic Dragon-flies that had remained in "papers," as sent, for five or six years. These insects are known to have remarkably rigid wing-attachments. The result was so far satisfactory that it is probable I may eventually abandon the old relaxing box for these and some other *Neuroptera*. As in everything a certain amount of experience is necessary. A *large* Dragon-fly takes about a quarter of an hour before it is safe to attempt to manipulate it; if attempted too soon the result is that the wing-roots break before full expansion is obtained. Specimens placed on the setting-boards overnight are ready for the collection next morning.—R. McLachlan].

Obituary.

Julius Flohr.—We regret to announce the death of this well known Coleopterist at Vera Cruz, Mexico, on February 8th, after three weeks' illness. He was born at Hamburg on February 11th, 1837, and had therefore nearly completed his 59th year. He was educated in his native city, and from his boyhood took an interest in collecting *Coleoptera*. After several years' residence in England, where he was engaged in commercial pursuits, he went, in 1859, to Mexico, and found employment in a first class banking house, of which he subsequently became a partner. In 1877 he retired from business, and from that period to the time of his death he devoted the whole of his attention to the investigation of the Coleopterous fauna of Mexico. To him we are largely indebted for so complete a knowledge of the *Coleoptera* of that prolific region. He was always ready to assist any of the contributors to the Biologia Centrali-Americana in working up neglected groups, and the pages of that work bear abundant testimony to his labours. From time to time he visited England, and made the acquaintance of Bates and many of the other leading entomologists. One or two papers on Mexican *Coleoptera* have been contributed by him to the German periodicals. For some years past, owing to failing health, he has had to vary his place of residence, and for that reason, no doubt, he shifted from the city of Mexico to Vera Cruz. As an old correspondent and personal friend he will be greatly missed by myself and others.—G. C. C.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *February* 17*th*, 1896.—Mr. A. H. MARTINEAU in the Chair.

Mr. G. T. Bethune-Baker was elected President of the Society in place of Mr. G. H. Kenrick, who found it necessary to decline the office again for this year; Mr. P. W. Abbott was elected Vice-President.

Mr. R. C. Bradley showed a specimen of the rare *Xanthogramma citrofasciatum* from near Droitwich. Mr. J. T. Fountain, nice variable series of *Bombyx quercûs*, *Odonestis potatoria*, and *Abraxas grossulariata*; the *potatoria* were from Droitwich, and the males showed a decided tendency to paleness, one approaching closely to the females in colour; one *grossulariata* had lost almost all the black markings on the hind edge of the hind-wings, it was one of a brood reared on *Pyrus japonica*, all of which came pale, another brood reared on hazel came dark. Mr. W. Bowater, *Sesia scoliæformis* from Killarney; also a pupa case of *Zeuzera æsculi*, of which he had found a number projecting from holes in a sallow tree in a garden at Edgbaston. Mr. Wainwright, a box containing *Diptera*, including rare and interesting *Cheilosiæ*, *Platycheiri*, &c.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

N.B.—The following correction is necessary in the Report of the Meeting on December 16th (*ante* p. 67):—for "*Leucania albipuncta*," read "*Nonagria brevilinea*."—C. J. W.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *February* 13*th*, 1896.—R. SOUTH, Esq., F.E.S., President, in the Chair.

Mr. Tolhurst, of Beckenham; Mr. E. Montgomery and Mr. A. Montgomery, of Ealing, were elected Members.

Mr. McArthur exhibited a very long series of *Triphæna comes*, Hb., from Hoy, all of them being intermediate between the type and var. *Curtisii*, Newm., and without black suffusion of hind-wings; also a number of extinct, rare and unique species and specimens of *Lepidoptera*, including a series of *Chrysophanus dispar*, Haw., a pair of *Lasiocampa ilicifolia*, L., two completely banded and one with yellow ground *Abraxas grossulariata*, L.; the two Killarney specimens of *Notodonta bicolor*, Hb.; the original specimen of *Nyssia lapponaria*, Bdv.; two *Synia musculosa*, Hb.; the specimen of *Hadena peregrina*, Tr., from Lewes; three *Caradrina ambigua*, Fb., one *Xylina lambda*, Fb. (var. *Zinckenii*, Tr.); three *Ophiodes lunaris*, Schiff., one of which was a beautiful banded var.; the unique *Catocala electra*, Rœs., taken by Mr. Vine; one *C. fraxini*, L.; and a series of *Eupœcilia gilvicomana*, Zell. Mr. R. Adkin, a specimen of *Cucullia gnaphalii*, Hb., bred by the late Mr. Tugwell. Mr. Sturt, specimens of *Sphinx convolvuli*, L., bred from Cornish larvæ; Mr. Tutt congratulated Mr. Sturt on being the first to rear the species from British larvæ. Mr. Oldham, *Cosmia affinis*, L., from Epping Forest. Mr. Frohawk, the contents of a pheasant's crop, consisting mainly of the larvæ of the Dipteron, *Bibio marci*. Mr. Moore, an ichneumon with an extremely long ovipositor from the Upper Amazon. Mr. Auld, a bred series of *Tortrix cratægana*, Hb., from the New Forest; the pupæ were found spun up in the leaves of buckthorn under oaks. Mr. Carpenter, a very large number of *Argynnis Paphia*, L., and its vars. Mr. South, a number of *Argynnidæ* from the Palæarctic region, and read a paper on "The genus *Argynnis*, with particular reference to varieties having pale areas." A long and interesting discussion took place as to the cause of this variation.

February 27th, 1896.—The President in the Chair.

Mr. A. H. Waters, B.A., of Cambridge, and Mr. J. A. Lucas, B.A., of Kingston-on-Thames, were elected Members.

Mr. R. Adkin exhibited specimens of *Hybernia leucophearia*, Schiff., from Abbott's Wood; the pale and dark bordered were found in equal proportions, and only one black specimen was taken. Mr. Short, a bred series of *Acronycta myricæ*, Gn., with a Dipterous and a series of Hymenopterous parasites on its larvæ; Mr. Billups recognised the latter as *Ichneumon fuscipes*. Mr. Dennis, two living females of *Vespa germanica*, F., taken in February. Mr. Perks, two living specimens of *Rhagium inquisitor*, L., from Epping Forest. Mr. McArthur communicated notes on the occurrence and life-history of *Coccyx cosmophorana* and *Retinia resinella*; he said that the former was always more or less common at Rannoch, where the latter was unknown. As far as he had observed, the larvæ of the former did not in Scotland feed in the way described by Kaltenbach. He was convinced that the larvæ did not normally feed on the refuse of *R. resinella*, but that it did so at Forres he was perfectly certain. A long discussion ensued, during which it was suggested that *R. resinella* had not abstracted all nourishment from its food, which was hence available as pabulum for *C. cosmophorana*, and so presumably the latter species had different habits in different districts. Mr. Billups then read a paper, entitled, "Hymenopterous and Dipterous Parasites reared by Members of the Society during 1891 and 92," and exhibited in illustration a large number of species, with the hosts they had preyed upon.

March 12th, 1896.—The President in the Chair.

Col. Partridge exhibited bred specimens of *Phigalia pedaria* from Epping, of a unicolorous grey with dark nervures; a specimen of *Agrotis puta*, having alternate dark and pale bars; and the specimen of *Hadena albifusa* taken by him at Portland, August 15th, 1888. Mr. South, bred specimens of *P. pedaria* from a black female taken at Macclesfield; the males were of the same form as those of Col. Partridge, but most of the females were black. Mr. Adkin, specimens and sections of the nodules of *Retinia resinella*, to illustrate remarks made at the previous Meeting. Mr. Frohawk, bred male and female of *Nyssia lapponaria*, the ova having been obtained from Mr. Christy; the female was alive. Mr. West, of Greenwich, a female *N. hispidaria* taken in West Wickham Woods. Mr. Lucas, a Carding Spider taken at Hampton Court. Mr. Barrett, the series of the various species of the genus *Dianthœcia* from his own collection, including every shade of both *D. carpophaga* and *D. capsophila* from various British localities; *D. Barrettii*, with continental *D. luteago* for comparison, and the only known Welsh and English examples; *D. cæsia*, with continental forms for comparison; *D. albimacula* from Dover, Folkestone and Portsmouth; two drawers from the cabinet of Mr. Sydney Webb containing the same species, and including the two *D. compta* from the late Mr. Bond's collection; and also Mr. Adkin's series of *Dianthœciæ*. In the discussion which ensued, Mr. Barrett considered *D. carpophaga* and *D. capsophila* as one and the same species, he was convinced that *D. Barrettii* was but an extreme local form of the continental *D. luteago*, and felt almost inclined to say that there never was a British specimen of *D. compta*. Messrs. Adkin and Tutt preferred to consider the first named as closely allied species, possessing extreme parallelism in their range of variation. Various Members testified as to the doubtful origin of British *D. compta*. Mr. Hall said that he always found *D. carpophaga* larvæ on *Lychnis vespertina*, and scarcely any on *Silene*. Mr. McArthur gave instances of how *D. conspersa* always resembled the colour of rocks or walls on which it sat in various districts. Mr. Tutt said that *D. cucubali* was the only member of the genus which came to sugar, and that it was also double brooded.—Hy. J. Turner, *Hon. Secretary*.

Entomological Society of London: *February* 19*th*, 1896.—Prof. Raphael Meldola, F.R.S., President, in the Chair.

Mr. T. Hudson Beare, of Park House, King's Road, Richmond; Mr. William James Kaye, of Worcester Court, Worcester Park, Surrey; and Mr. Charles H. Dolby-Tyler, of the British Consulate, Guayaquil, Ecuador, South America; were elected Fellows of the Society.

Dr. D. Sharp exhibited preparations of *Dytiscus latissimus* and *Cybister Rœselii*, to show the so-called secondary wing noticed by Meinert. He stated that this structure is only a part of the elytron, to which it is extensively attached, and that he considered that it corresponded with the angle at the base of the wing seen in so many insects that fold their front wing against the body. He could not consider that this structure afforded any support to the view that the elytra of beetles correspond with the tegulæ of *Hymenoptera* rather than with the front wings. Mr. McLachlan, Prof. Meldola, and Mr. Gahan made some remarks on the subject. Mr. C. G. Barrett exhibited, for Dr. H. G. Knaggs, cells of *Retinia resinella* formed of resin but lined with wax. A portion of the cell had been removed and the resin dissolved away with spirit, leaving a slight film of wax (*cf.* Ent. Mo. Mag., Nov., 1895, pp. 251, 252). Mr. Tutt stated that a secretion of wax had been detected by Dr. Chapman in the larva of *Parnassius Apollo*. Prof. Meldola suggested that as Dr. Knaggs had shown how to separate the resin from the wax it would be of interest to make a chemical investigation of the latter, since a sufficient supply of this material could easily be obtained. No insect wax, with the exception of that of the bee, had been submitted to investigation by chemists. Mr. Hampson and Mr. Blandford continued the discussion. Mr. Gahan exhibited drawings of the dorsal segments of the abdomen of *Dyscritina longisetosa*, formerly described by Prof. Westwood in Trans. Ent. Soc., 1881, a specimen of which was shown by Mr. E. E. Green at the last Meeting of the Society. He regretted that no drawing, showing the ventral surface, had yet been prepared. Mr. McLachlan, Dr. Sharp and Mr. Green made some remarks on the subject. Mr. B. A. Bower exhibited specimens of *Argyresthia Atmoriella*, Bankes, taken in Kent, in June, 1894, a recent addition to British *Lepidoptera*. Mr. E. E. Green read notes on the habits of the Indian ant, *Œcophylla smaragdina*, Fabr. He said that he believed that at some previous meeting of the Society, Mr. Ridley, of the Singapore Museum, made some remarks on this ant and its supposed habit of using its own larvæ as web-spinners in the formation of its nest, but he had not been able to find anything on the subject in the Proceedings. Mr. Green stated that he was now able to produce corroborative evidence from an independent source. The facts were noted by his friend Mr. W. D. Holland, of Balangoda, Ceylon, a most careful observer. Mr. Green exhibited the specimen referred to by Mr. Holland, and pointed out that the larvæ were still tightly grasped by the jaws of the ants, and he thought it probable that other web-spinning ants utilized their larva in the same way. Mr. Hampson said he could confirm this statement. Mr. G. F. Scott-Elliot read a paper, entitled, "Notes on Flower Haunting *Diptera*." The author pointed out that some of the higher types of *Diptera* appeared to prefer red and blue flowers, and oftener visited the complicated types of plants than the smaller *Hymenoptera*. He also alluded to the effect of insect visitors in isolating particular individuals. Prof. Meldola expressed himself much interested in the paper, and stated that although he was aware, from the writings of Hermann Müller and others, that *Diptera* played an important part in the fertilization of flowers, he was unaware of the very great importance which these insects possessed for the function of pollination until he heard Mr. Scott-Elliot's paper. He also called attention to the urgent need of a manual of British *Diptera*. Mr. Roland Trimen mentioned that in South Africa some species of *Orchidaceæ* were fertilized by *Diptera*. Dr. Sharp said Prof. Plateau thought that neither the colour or form of the flower played any part in attracting insects. Lord Walsingham enquired whether any observation had been made as to the *Diptera* which visited differently coloured flowers of the same species, such as Petunias. Mr. Barrett, Mr. Green, and Mr. Scott-Elliot continued the discussion. Mr. Tutt read a paper, by Prof. A. Radcliffe-Grote, entitled, "On the Nomenclature of the *Geometridæ*." A discussion on the rules of nomenclature followed in which Lord Walsingham, Prof. Meldola, Mr. Hampson, and Herr Jacoby took part.

March 4th, 1896.—WALTER F. H. BLANDFORD, Esq., M.A., F.Z.S., Vice-President, in the Chair.

Mr. P. Marshall, M.A., B.Sc., F.G.S., of Canterbury College, Lincoln, New Zealand, was elected a Fellow of the Society.

Mr. Percy H. Grimshaw exhibited specimens of *Cephenomyia rufibarbis*, Meigen, a new British Bot-fly parasitic on the Red Deer. He said that the specimens were collected by Mr. L. W. Hinxman, in Ross-shire, in June and July, 1894, and in the Cairngorm Mountains, in 1895. Mr. C. G. Barrett exhibited, for Mr. Porritt, a black variety of *Polia flavicincta*, taken at sugar in his garden at Huddersfield; a variety of *Cosmia trapezina* with a blue-black central band; and a variety of *Nœnia typica*, with pinkish-white central markings, bred by Mr. Tunstall of Huddersfield. Mr. A. H. Jones exhibited butterflies captured at Coomassie by Major Henry P. Northcott during the recent expedition. Sir John T. D. Llewelyn, Bart., M.P., exhibited specimens of a small species of *Diptera* which he believed to be parasitic on *Trochilium sphegiforme*, as he had bred a number from that species. He remarked that *T. sphegiforme*, although one of the most local and rare moths in this country, had occurred last year on the estate of Sir James Hills-Johnes, K.C.B., at Dolau Cothy, Carmarthenshire, in such numbers in the larval state as almost to destroy the whole of the alders growing there. Mr. G. H. Verrall said that the insects belonged to a species of *Phora*, possibly *Phora rufipes*, which fed on almost averything, but was not considered to be truly parasitic. Mr. Hampson exhibited an exotic species of *Locustidæ* which Lord Walsingham had found in his conservatory at Merton Hall, Norfolk. He stated that Lord Walsingham had not imported any exotic plants for some years. Dr. Sharp exhibited specimens of the pupæ of *Micropteryx* (probably *semipurpurella*) and drawings to illustrate their structure. The pupæ were sent to him by Dr. Chapman, who had described their peculiarities in the Transactions of the Society in 1893. Dr. Sharp considered the pupa to be that of a Trichopterous insect; most of its structures were those of *Trichoptera*, and the account given by Dr. Chapman of its emergence showed that this was essentially the same as that of *Trichoptera*. He remarked that the imago of this division of *Micropteryx* had been already shown to approach *Trichoptera* in several respects, and suggested that it should be treated as a group of *Trichoptera* whose larvæ are not aquatic in habits. If this course were not adopted he felt clear that *Trichoptera* could not be maintained distinct as an order from *Lepidoptera*. He also called attention to the importance, for a classification of *Lepidoptera*, of obtaining a full knowledge of the structure and life-history of *Eriocephala calthella*. Mr. McLachlan said that so long ago as 1865 he had suggested the close affinity of *Micropteryx* to the *Trichoptera*; the opinion then formed had since been much strengthened, but he was not disposed to admit co-ordinal relationship. Mr. Hampson, Mr. Barrett, and Mr. Blandford also took part in the discussion which ensued. Mr. McLachlan exhibited a singular instance of monstrosity in a Dragonfly (*Hetærina occisa*, Hag.) [*vide* p. 83 *ante.—Eds*]. Mr. E. E. Green exhibited a larva of an Homopterous insect—one of the *Cicadinæ*—from Ceylon, having what appeared to be a head at its caudal extremity. He pointed out that the larva had caudal appendages which might be mistaken for hairy antennæ, and pigment-spots resembling eyes on the antepenultimate segment of the body. The insect walked either backwards or forwards, and when first seen looked like a beetle of some kind, the caudal extremity representing the head. Mons. Louis Péringuey contributed a paper entitled, "Descriptions of New Species of South African *Coleoptera*, chiefly from Zambesia." Dr. Sharp read a paper, by Professor Williston, entitled, "On the *Diptera* of St. Vincent, West Indies. Part I."—H. Goss, *Hon. Secretary*.

AMARA FAMELICA, ZIMM., AN ADDITION TO THE BRITISH LIST.

BY G. C. CHAMPION, F.Z.S.

For some years past I have occasionally captured an *Amara* in this neighbourhood which appeared to be a form of the variable *A. spreta*, Dej. But on comparing these specimens again lately with *A. spreta*, chiefly at the request of my friend Mr. E. Saunders, who has also met with the insect here, I find that they are unquestionably referable to *A. famelica*, Zimm. [= *contrusa*, Schiödte, and *vulgaris*, Thoms. (*nec* Panz.)], a species not hitherto recorded as British. I also possess an example captured by myself at Chobham on September 10th, 1876. The insect occurs in sandy places on heaths, chiefly in the spring and autumn, in company with the extremely local *A. infima*, which, so far as I am aware, is confined to this neighbourhood in Britain.*

A. famelica is intermediate, as it were, between *A. spreta*, Dej. (= *curta*, Steph.), and *A. lunicollis*, Schiödte (= *vulgaris*, Panz.). From the first-mentioned it may be separated by its more elongate elytra, the distinctly more slender and entirely black legs (the tibiæ are pitchy-red in *A. spreta*), and the darker first and second joints of the antennæ; the males, moreover, have the middle and hind tibiæ less bowed, and the females have two setiferous pores (instead of one, as in *A. spreta*) on either side of the fifth ventral segment near the posterior margin. From *A. lunicollis*, with which it agrees in the dark basal joints of the antennæ and the black legs, it differs in having the thorax less dilated, with the hind angles rectangular (instead of obtuse), and the elytral striæ not more deeply impressed towards the apex, the insect in this respect agreeing with *A. spreta*. The two basal joints of the antennæ are usually rufo-testaceous beneath, but they are sometimes entirely black. The thorax has two very distinct impressions on either side near the base, the one near the hind angles oblique, these being very deep in some specimens. The elytra are finely striate throughout. The colour is variable, nigro-cæruleous or almost black examples (Thomson's var. b) occurring. The insect is widely distributed in northern and central Europe, but it his not been recorded from France. According to Schaum (Naturg. Ins. Deutschl., i, p. 530), whose description applies perfectly to the numerous specimens before me, *A. famelica* is very rare in Germany; Putzeys (Monogr. des *Amara*) records it from Belgium. All the British specimens that I have seen of *A. spreta* are from Deal. Two other very local *Carabidæ* also occur here with *A. famelica*; these are *Harpalus discoideus* and *Bembidium nigricorne*.

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* The original locality, "Deal," has never been confirmed, and was perhaps a mistake.

Horsell, Woking: *April* 11*th*, 1896.

THE SUPPOSED *ARGYRESTHIA ILLUMINATELLA*, Z.

[*vide* Wlsm., Ent. Mo. Mag., XXX, 50–1 (1894)].

BY THE RIGHT HON. LORD WALSINGHAM, M.A., LL.D., F.R.S.

In the language of the Western American I am disposed "to weaken on it."

A re-examination of Zeller's series of *illuminatella* in the course of a successful search among them for *A. Atmoriella*, Bankes, has convinced me that there are at least three species included by Zeller under the above name. It is exceedingly difficult to determine which of these species should be regarded as the one to which Zeller originally gave the name, but his oldest specimens have on them two names, "*illuminatella*, Ti.," and the unpublished one, "*glaberrimella*, Z." The specimen labelled by him with a reference to his original description (Isis, 1839, 205), is probably the one subsequently referred to in his paper [Lin., Ent., II, 291-2 (1847)], but there is strong reason to believe that he had not this specimen before him when he wrote the notice in the Isis where the following short description might well be taken to refer to specimens in his series extremely similar to those collected by Mr. Salvage at Forres: "der *Præcocella* sehr nahe, aber die Vorderfl. fast strohgelb und glänzender, ohne Verdunkelung des Mittelraumes."

In his subsequent more elaborate description eight years later he refers to the breadth of the fore-wings and to the fact that the hind-wings are noticeably broader towards the apex than in *præcocella*, although the palpi are thinner and more slender. If his type label were affixed at this date (and it is obvious from the reference it bears to Ratzeburg that it could not have been written before 1840), he would seem to have picked out the broadest-winged specimen in his series with which no other can be regarded as conspecific; this specimen is labelled "*Illuminatella*, F.R., Is., 1839, 205, *Bergiella*, Rtz.," and is nearer to *certella*, Z., and broader in the wings than those which I take to be his original types.

The description of *præcocella* lays emphasis upon the rufescent suffusion of the wings, and in a long series of that species in Zeller's cabinet there are only two specimens in which this is not distinguishable, these specimens agree absolutely with those taken by Mr. Salvage and more doubtfully with one or two at least in Zeller's series of *illuminatella*. Since Zeller mentions in his first description *fourteen specimens*, and as the majority of his series agree with that bearing the oldest label, whereas the specimen labelled and described in the Linnæa Entomologica as his type is certainly different, we must adopt the older specimens (those of the Isis) as typical *illuminatella*.

This species does not agree with Salvage's captures (which are similar to two specimens in Zeller's series of *præcocella*) and, moreover, as the same unsuffused form is undoubtedly mixed with *præcocella* in our British cabinets and like the typical form is taken among juniper, I am not at present prepared to dispute the conclusion arrived at by Mr. Bankes and others that it is a variety of that species. My only object in writing is to make the admission that I was mistaken in calling it *illuminatella*, and to confirm my first impression that it is wholly distinct from the species since described under the name *Atmoriella*, which was undoubtedly included in Zeller's series of *illuminatella*.

Merton Hall, Thetford: *March*, 1896.

ON A VARIETY OF *LEUCANIA PALLENS* AND A PROBABLY NEW SPECIES OF THE SAME GENUS.

BY C. G. BARRETT, F.E.S.

Among some *Leucaniæ* recently sent for examination by Mr. G. F. Mathew, R.N., and captured by him on the coast of Suffolk and Essex, is a form of *L. pallens* of quite unusual interest. A red variety of this usually straw-coloured species is not of rare occurrence, but such specimens usually show, most distinctly, the thickened white nervures which so neatly and conspicuously ornament, with nearly parallel white lines, the fore-wings of this species. In the specimens now alluded to, however, no such white lines are visible. The colour of their fore-wings is a deep purplish-red, almost the colour of red pine wood, but it is smooth and nearly uniform, even the usually conspicuous whiteness of the median nervure having disappeared. The size and shape are quite normal, and the three black dots, sometimes visible on the fore-wings of ordinary *L. pallens*, are equally distinct, but the hind-wings in the variety in question are, in both sexes, clouded with smoky-grey, and the nervures of those wings, in the middle area especially, are decidedly darker. This variety of *L. pallens* seems to agree closely with what Hübner called *L. ectypa*.

Among the *Leucaniæ* already alluded to, Mr. Mathew has secured upon the same coast in the month of July, a male and three females of what appears to be an undescribed species.

The antennæ of the male are simple, but toward the base ciliated with minute tufts of bristles, beyond this with minute single bristles only; pale buff. Eyes hairy. Palpi densely tufted, so that the apical joint is nearly concealed; brownish-buff; head similar. Thorax rather robust, brownish-buff in front, paler buff, or honey-colour, toward the back; shoulder lappets a little raised and finished off with long scales lying back; fascicles of hair scales at the back white, curved in, so as to meet on the base of the abdomen, which also has an abundance of long white scales on its basal segments covering its pale buff surface; lateral tufts large, faintly tinged with grey and yellowish; anal tuft yellowish. Fore-wings rather broader than in *L. pallens*, and more pointed at the apex, shaped in fact as in *L. straminea*; costal and dorsal margins nearly straight; apex acute; hind margin below it oblique and faintly hollowed, but rounded off at the anal angle; entire surface of a smooth soft honey-colour, or colour of the honeycomb (a shade of buff difficult to describe); having the nervures faintly perceptible but not paler in colour. At the apex of the discal cell is a round black dot as in *L. pallens*, and two more lie in the position of the ordinary "second line" or "elbowed line," which is further indicated by faint blackish dashes, more particularly towards the costa, where this faint line is decidedly curved back. Hind-wings rounded, white at the base and apex, but with the middle area tinged with smoky-grey and reddish; all the nervures broadly dusted with blackish; cilia white. Under-side of the fore-wings pale buff, tinged in the middle with brownish; before the apex is a black spot on the costa, indicating a faint slender transverse line; hind-wings yellowish-white dusted with black, and having a slender transverse series of black dashes on the nervures. In the female the fore-wings are broader and more decidedly acuminate, also as strongly honey-coloured; in one specimen the blackish indications of a "second line" on the fore-wings are absent; in another they are more noticeable than in the male; but in the third there is a conspicuous and complete curved line of black dashes and spots from the costal to the dorsal margin, where it is supplemented by further blackish dashes along that margin, and a black spot in the position from which would arise the usual *first* line.

This last specimen is a very striking and conspicuous insect. I know of no connecting link to unite the form which I have here described with *L. pallens*, yet, from the presence and position of the three round black dots (when visible) a very close alliance to that species must be admitted; still, from the somewhat greater robustness of the thorax, the greater breadth and different shape of the fore-wings, and their very peculiar colour and texture, I am disposed to think it specifically distinct, and in that view propose for it the name of *favicolor*.

At first sight it strongly reminds one of *Nonagria lutosa*, and especially of the small race of that species which was once called *N. vectis*, but from this species its hairy eyes at once separate it.

39, Linden Grove, Nunhead: *April*, 1896.

"DRY RELAXING" FOR *MICRO-LEPIDOPTERA.*

BY H. GUARD KNAGGS, M.D., F.L.S.

It is very gratifying to learn that my friend Mr. Clark's discovery of relaxing insects by means of wood naphtha has yielded results of even greater practical utility than was originally anticipated for it; but admirable as is its action in a general way, it does not answer with small *Tineina*, the wings of which, as Mr. Eustace Bankes informed me on a recent occasion, are apt to cockle, and the *cilia* to be injured by the slightest contact with fluid of any kind whatever. Mr. Bankes' remarks gave me the cue to make the attempt to devise a means whereby such little things as *Elachistidæ*, *Lithocolletidæ*, and *Nepticulidæ* could be relaxed without the application of fluid or deleterious vapour. The following is the outcome of my endeavours.

Bearing in mind Mr. Philip de la Garde's note (Entom., xxvii, 294) that Naphthalin has the power to keep freshly caught insects in a limp state for several days, even when collecting under a tropical sun in Equatorial Africa, this substance was first put upon its trial, but its power to relax insects which had been set for a considerable time was not strong enough for the purpose, though decidedly appreciable; so that it was considered advisable to supplement its action with a small quantity of the vapour of wood naphtha. Accordingly, having procured an accurately stoppered, wide mouthed, three ounce bottle, a piece of sheet cork was cut in the form of a circle of a diameter a trifle less than the mouth of the bottle, while a long pin, stuck in its centre, served as a handle. Into the bottle two drachms ($\frac{1}{4}$ oz.) of sublimated naphthalin with six drops of wood naphtha were introduced; the insects pinned on the stage alluded to above, with their wings kept well away from the cork, were then lowered into the bottle, and the stopper replaced.

In three hours, roughly speaking, relaxation had commenced, in twenty-four it had greatly increased, it was apparently complete in forty-eight, though resetting could be undertaken at the end of twenty hours.

The ordinary albo-carbon, which is an impure naphthalin, used for gas-burning purposes, will answer the purpose, but the effect is by no means so satisfactory as that produced by the sublimated article.

The question naturally rises in our minds—Is the wide-spread use of *Naphthalin* in our cabinets, as the most convenient preventive of moulds and mites, likely to do mischief? So far as my present experience goes I should say not——we do not use the agent in sufficient quantity for that. My gravest doubt is whether, after a lapse of time, it may not cause insects to fade ; I fancied that, in the case of two *S. cembræ* which had been over long in the vapour of the impure albo-carbon, there was a slight tendency in that direction : but it is my intention to pursue this subject, which is of course one of the utmost importance, seeing that not only our National, but also all the chief, collections in the country are now preserved by means of *Naphthalin.*

London : *April*, 1896.

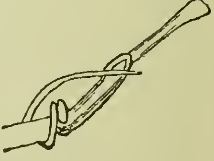
HYDROPTILIDÆ COLLECTED IN ALGERIA BY THE REV. A. E. EATON.

BY KENNETH J. MORTON, F.E.S.

Some time ago Mr. McLachlan sent to me for examination a large number of *Hydroptilidæ* collected by the Rev. A. E. Eaton in Algeria during the years 1892-3-4. These represented at least the most important, if not the only, collection of these insects ever made in northern Africa, and I looked forward to their examination with much interest. Now, when the examination has been completed, I find that the collection proves to be of consequence, not on account of new species contained therein, but from the fact that its constituents are almost entirely of a European character. This latter feature is not one of a merely representative kind, but almost absolute, the species agreeing so closely with known European forms that I can only find two whose genitalia appear sufficiently distinct to warrant their being considered new, and one of these belongs to a well known Palæarctic group. Further researches will no doubt add to the list of Algerian *Hydroptilidæ*, but I do not think the conclusions come to with regard to these first-fruits will be much altered by future results.

The collection contains the following species :—

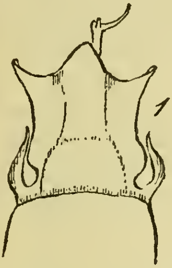
1. *Allotrichia pallicornis*, Eaton.—In large numbers from Bouzaréa (April 3rd, 1893), and two examples from El Biar (April 17th, 1893) ; both localities near Algiers. I think there can be no reasonable doubt that these are really *A. pallicornis*. The enormously large foliaceous inferior appendages are apparently identical with those of the English example, from which Mr. McLachlan made his description (Mon. Rev. Syn., p. 509). In the latter the superior trifid plate is very distinct, but in all the Algerian males the details of that particular part are obscured by the great exsertion of the penis and the accessory parts. A figure of the penis is here given.

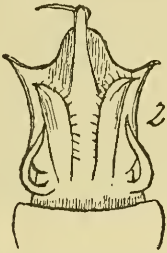


2. *Hydroptila sparsa*, Curt.—Many examples from Frais Vallon and Mirabeau, (November, 1892); conduit near Fort St. Germain (May 29th and 31st, June 3rd, 1893); and Fontaine Chaude, near Biskra (April 6th, 1894).

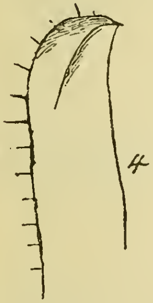
3. HYDROPTILA CAMPANULATA, *n. sp.*

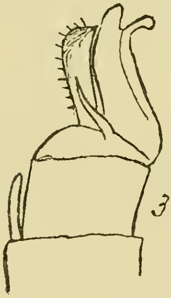
Antennæ about 32-jointed in the ♂ (25-jointed in ♀), fuscous, but with pale pubescence, which gives them a whitish look in certain lights; there is also a long ante-apical fuscous mark. Clothing of vertex yellowish-white; palpi and fore-legs yellowish, the latter apparently marked with fuscous; the two hinder pairs of legs paler, almost white. Fore-wings black or blackish-brown, with many white markings, particularly some spots at the base, an ante-median vague fascia, showing large spots on anterior and posterior margins, a similar median fascia, and a strongly marked pale sub-apical crescent, followed by an equally strongly marked black apical spot; the raised hairs are mostly whitish, and these help to give the wings a generally pale aspect, except towards the apex. Hind-wings grey, with iridescent concolorous fringes.





At the apex of the abdomen of ♂ there is a very large dorsal plate, somewhat campanulate in outline, the apical margin trifid, the median production, the largest, rather obtuse, the side angles acute when viewed from above; seen from the side the median prolongation is nearly vertical and obtuse. From the sides of the plate arise two small appendages, curved and acute. The inferior appendages are larged blade-shaped, tip falcate. Penis near its apex having a sharp hook arising at a nearly right angle, and similar in this respect to several other members of the genus. Exp. of ♂, about 6 mm.; ♀ slightly larger.





In many examples from the river at Biskra just above the Barrage (May 29th, 1893, and February 8th, 1894), and Sources d'Oumache, near Biskra (June 4th, 1893); Constantine (October 3rd, 1893).

Of the *sparsa* group, but abundantly distinct from that species on account of the median prolongation of the dorsal plate, and the inferior appendages are also broader. The wings, in the ♂ at least, are noteworthy on account of the strong relief into which the apical spot is brought by the pale crescent which bounds it inwardly, reminding one of certain minute *Lepidoptera*.

Explanation of figures.—Fig. 1, apex of abdomen of ♂, from above; fig. 2, ditto, from beneath; fig. 3, ditto, from side; fig. 4, inferior appendage, from side, much enlarged. The base of the inferior appendages (see fig. 2) is usually more or less concealed by hairs, and even in the denuded example from which the figures were made this point could not be satisfactorily made out.

4. *Hydroptila femoralis*, Eaton.—A single ♂ from Algiers (December 7th, 1892).

5. *Hydroptila Maclachlani*, Klapálek.—Two males from the Ruisseau des Singes, near Médéa (July 26th, 1893).

6. *Oxyethira falcata*, Morton.—Four examples from a stream at El Biar, near Algiers (March 2nd, 1893), and one from a stream near Sétif (June 6th, 1893), appear to belong to this species; these are not in very good condition as regards the anal parts.

7. Another bright little insect, without ocelli and with the spur formula of *Oxyethira*, is represented by a single ♂. It is probably a new species, but I do not venture to describe it from the present material. It is labelled "Mirabeau, 5th November, 1892." The penis has a very long tooth or spine near the apex on one side.

8. *Orthotrichia angustella*, McL.—Five examples from the Roumel, above the gorge at Constantine (October 3rd, 1893), appear to belong to this species rather than to *O. Tetensi*, but they are not in very good condition.

Carluke, N. B.:
January 2*nd*, 1896.

NOTES ON SOME *HEMIPTERA-HOMOPTERA*, WITH DESCRIPTIONS OF FOUR NEW SPECIES FROM THE VIENNA MUSEUM.

BY THE REV. CANON W. W. FOWLER, M.A., F.L.S.

CERCOPIDÆ.

The constitution of this Family is still a matter of considerable doubt; the genus *Cercopis*, as understood by Fabricius, had almost a world-wide range, as pointed out by Distant (Trans. Ent. Soc., 1878, p. 173). In 1843 the genus was subdivided into six genera by Amyot and Serville, who restricted the genus *Tomaspis* to species from South and Central America. In 1866 Stål sunk three of Amyot and Serville's genera, *Triecphora*, *Monecphora* and *Sphenorhina*, and placed them all under *Tomaspis*, thus extending the range of the latter genus to the Old as well as the New World. Distant (*l. c.*, p. 178) agrees with Stål in suppressing *Triecphora* and *Monecphora*, but prefers to recognise *Sphenorhina* on the ground that it seems so well marked a genus, and one so easily recognised, that it is at least convenient to retain it; the sole distinction, however, of this genus, as given by Amyot and Serville, is that it has the front laterally compressed, "avec une forte carène en forme de coin plus ou moins aigu et dilaté" (*Hémiptères*, p. 562), whereas in *Monecphora* it is not compressed, and has only a feeble carina, and in *Triecphora* it is furnished with three raised lines or carinæ. At best the character given for *Sphenorhina* is a weak one, generically considered, and besides this it is not always strongly marked, and somewhat intermediate examples occur; the facies of the species differs considerably, some being elongate and parallel, and others short and ovate; the shape, however, is by no means associated with the carination and compression of the front, as the most similar species in appearance differ in this point; unless, therefore, we allow undue weight to geographical distribution, we can hardly, in the present state of our knowledge, do anything else but follow Stål, and include the bulk of the *Cercopidæ* under *Tomaspis*.

The three following species of *Tomaspis* are from a portion of the Vienna Museum collection, which has been kindly lent me by Dr. Ganglbauer and Herr Handlirsch.

TOMASPIS (MONECPHORA) PICATA, *n. sp.*

Elongata, angusta, parallela, coriacea, fronte testaceâ, vertice nigro, antice utrinque testaceo, pronoto scutelloque nigris, illo basi sinuatâ, maculâ antice utrinque, et margine anteriori anguste testaceis, hoc excavato postice acute producto; tegminibus nigris parte basali dimidiâ maculâque ante apicem albidis, apicibus regulariter rotundatis; pedibus testaceis, tibiis tarsisque posticis nigris, pectore infuscato, abdomine ad partem testaceo, apice nigricanti vel toto nigro.

Hab.: New Granada, *Nolcken* (Vienna Museum Collection).

var. lugubris—*differt margine anteriori pronoti haud testaceo, tegminibusque, maculis apicalibus exceptis, totis nigris.*

Elongate, narrow and parallel, black, with the front, and a spot on each side of the anterior part of the pronotum, testaceous, and the elytra with the basal half, except just at shoulders, and a spot just before apex, whitish; the legs are testaceous, except the posterior tibiæ and tarsi, which are black, and the apex at least of all the tarsi is pitchy; the pronotum has a broad, longitudinal, central furrow, and the scutellum is excavate; the sculpture is very fine throughout, and gives the insect a dull appearance. Long., 13 mm., lat., 5 mm.

The variety differs in not having the anterior margin of the pronotum testaceous, and in the fact that the tegmina are entirely black with the exception of the distinct whitish spot just before apex; it is also rather smaller. Long., 12 mm., lat., 4 mm.

TOMASPIS (MONECPHORA) NOLCKENI, *n. sp.*

Elongata, parallela, nigra, tegminibus testaceis, sub-pellucidis, apicibus *late nigris, margine exteriore clavi, maculâ elongatâ utrinque ad latera, et vitta ante nigrum apicem tegminum rufo-flavis, pronoto rugose sed haud profunde punctato, elytris dense haud fortiter punctatis, corpore subtus pedibusque piceis.*

Elongate and parallel, with the head and pronotum black, and the elytra semitransparent, of a brownish-testaceous colour, with the apices broadly black, and a straight orange band immediately above the black colour, a small space at margins between the orange and black portions being testaceous; the exterior margin of the clavus and an elongate spot at margins are also orange, but the colour is not as bright as that of the subapical vitta; the pronotum is rugosely but not deeply punctured, and the scutellum is somewhat excavate; the tegmina are very closely punctured, particularly towards apex; under-side and legs pitchy.

Long., 9 mm., lat., 3½–4 mm.

Hab.: New Granada, *Nolcken* (Vienna Museum Collection).

TOMASPIS (SPHENORHINA) CRUX-MINOR, *n. sp.*

Ovalis, nigra nitida, tegminibus quatuor magnis maculis læte miniatis, tota tegmina, marginibus, suturâ, vittâque transversâ centrali exceptis, obtinentibus, capite triangulariter producto, excavato; pronoto nitido, ad medium latissimo, angustato, antice utrinque late impresso, sub-fortiter remotius punctato; scutello excavato, postice obtuso; tegminibus densissime subrugose punctatis, coriaceis; pedibus piceis.

Small, oval, shining black, with the tegmina bright scarlet, except the margins, suture, and a broad transverse central line, which are black; the head is triangular, with a raised line in the middle and excavate at sides; pronotum hexagonal, with the three front sides of the hexagon margined, broadest in middle, base nearly straight, surface very shining, rather strongly and distinctly punctured; scutellum excavate, obtuse behind; tegmina very closely sculptured, coriaceous; legs pitchy.

Long., 8 mm., lat., 4½ mm.

Hab.: New Granada, *Nolcken* (Vienna Museum Collection).

Among the other *Cercopidæ* in the portion of the collection sent to me are four varieties of the fine *Cercopis* (*Sphenorhina*) *circulata*, Guér.; in two of these the darker colour is replaced by light testaceous, in one the colour is a sort of orange and the markings are irregular, and the fourth is almost entirely black; there is also a variety of *Tomaspis* (*Monecphora*) *inca* with the tegmina not banded, but almost entirely unicolorous scarlet, with the apex and a band at base black; a similar variety is contained in the British Museum Collection.

ISSIDÆ.

The following species belongs, apparently, to the genus *Neæthus*, Stål, the type of which is *N. vitripennis*, which was formerly referred to the genus *Hysteropterum*. The genus is distinguished by having the thorax truncate at base, the tegmina tectiform and wholly or partially vitreous and transparent, regularly reticulate, and very broadly rounded at apex, the costa dilated and more or less distinctly venose transversely, and by having the radial vein furcate not far from the base; the wings are absent or rudimentary.

NEÆTHUS SEMIVITREUS, *n. sp.*

Parvus, brevis, testaceus, tegminibus fere circularibus, opacis, maculâ latâ centrali irregulariter vitreâ, venis crassis elevatis; clavo ad marginem maculis quibusdam parvis fuscatis.

A small and short species of a testaceous colour, with the tegmina almost semicircular, opaque, with the margins partly transparent, and with a very large irregular vitreous patch in centre, occupying the greater part of the surface; the venation is much less close and less regular than in *N. vitripennis*, and from the veins proceed very short, incomplete, transverse veins; the clavus has several very small dark spots on its outer edge; the posterior tibiæ are plainly bispinose, and their apical spines are well marked. Long., 4 mm., lat., 2 mm.

Hab.: California, Signoret's Collection. Two female specimens (Vienna Museum Collection).

Among Signoret's insects I have found a considerable number to which names are attached of which I can find no trace in any publication, and it appears evident that they are merely MS. names; no less than ten species of *Clastoptera* are named in this way. Great confusion arises from the practice of naming species without describing them, and it is obvious that no name should ever be attached to a species before the description is written and ready for the printer; one or two authors have made the confusion much worse by referring in subsequent publications to species which they have in this way named and never described.

The School House, Lincoln:
March, 1896.

Coleoptera at Porlock, Somersetshire.—On February 17th last I arrived at Porlock for a short stay, in search of health—and beetles. The nature of the country seemed very promising, but, after constant and energetic effort during several days with scarcely any good result, I had to pronounce it disappointing. In the woods the ground and trees were thickly covered with moss and lichens, and afforded fair hope of yielding *Carabus intricatus* and other desirable species, but the most persistent search failed to induce anything beyond an occasional *Tachyporus hypnorum* to tumble out upon my nice new sheet of paper. Logs were fairly plentiful and in good condition for working, but bark proved almost as barren as moss. I next tried water—the running streams and the ditches near the shore—but could not net a single beetle. My only remaining chance seemed to lie in searching the shingle on the margins of the streams, and there, by sheer hard labour, I succeeded in finding a few good things. Only one nest of *Formica rufa* produced any beetles, and three or four species were captured amongst stones on the hill sides.

The following is a list of my fortnight's captures :—under bark (oak), *Carabus violaceus*, *Pterostichus oblongopunctatus*, *Leptusa fumida*, *Quedius xanthopus* (8), *Homalium punctipenne* (2), *Cerylon ferrugineum* (6), *Scaphidium 4-maculatum* (1), *Rhinosimus planirostris* (1), *Trypodendron domesticum* (4) ; walnut bark, Bossington, *Euplectus punctatus* (5), *Ptinella* (two or three species, 54 specimens, not yet determined), *Abræus globosus* (2) ; poplar bark, Bossington, *Rhynchites conicus* (1) and *Dorytomus vorax* (10). Amongst shingle, &c., on the margins of streams, by flooding, *Hydroporus rivalis* (1), *Agabus guttatus* (1), *A. biguttatus = fontinalis* (1), *Helophorus æneipennis* (4), *Hydræna gracilis* (1), *Cercyon pygmæus* (2), *Ocalea castanea* (3), *Homalota currax* (abundant, to fill up my evenings I set 143 specimens), *H. pavens* (78—44 ♂, 34 ♀—I never took more than single specimens before in any locality, the proportion of ♂ to ♀ specimens also seems remarkable for this species), *H. cambrica* (3), *H. eximia* (2), *H. silvicola* (1), *H. exilis* (3), *H. aquatica*? (4—this beetle has a somewhat different facies from the *aquatica* of other localities, and may prove to be another species), *H. sordida* (1), *H. testudinea* (1), *H. dubia* (1—the generally common *H. fungi* seemed entirely absent from the district), *H. analis* occurred only sparingly, *Myllæna elongata* (8), *M. brevicornis* (6), *Quedius riparius* (14—see page 80), *Q. maurorufus* (1), *Q. umbrinus* (9), *Q. auricomus* (1), *Philonthus ventralis* (1), *Dianous cœrulescens* (plenty), *Stenus guttula* (sparingly), *S. Guynemeri* (plenty), *S. declaratus* (1), *S. tempestivus* (1), *Ancyrophorus aureus* (very abundant), *Lesteva pubescens* (5), *L. sicula* (1), *Ips 4-guttatus* (1—rather out of its element in wet shingle one would think), *Parnus prolifericornis* (1), *P. auriculatus* (1). I expected to find *Bembidia* well represented, the conditions being so favourable, but only five or six of the common species turned up ; *B. tibiale* was fairly numerous, I saw only one *B. decorum* and two *B. rufescens*. In a nest of *Formica rufa*, *Oxypoda hæmorrhoa* (1), *Notothecta anceps* (1), *Xantholinus atratus* (4), *Stilicus orbiculatus* (1), *Trichopteryx* sp. — (3), *Cerylon histeroides* (4), *Monotoma angusticollis* (14), *M. formicetorum* (25), *Cartodere elongata* (2). Under stones on hill sides, *Medon melanocephalus* (1), *Agriotes sputator* (3), *Trachyphlœus scaber* (2), *T. laticollis* (6—all on the under-sides of scattered rock-flakes).

Altogether beetles were remarkable for their absence, and for this reason, as well as the fact that from that district there are few if any records, I have included in my report many species which otherwise might not be considered worthy of mention. My list of captures is redeemed from being absolutely commonplace only by such finds as *Quedius riparius*, *Ancyrophorus aureus* and *Trachyphlœus laticollis*, —W. G. Blatch, Knowle, near Birmingham : *March 9th*, 1896.

Rhizophagus perforatus in daffodil bulbs.—About a month ago a correspondent living near Dublin sent me a specimen of a beetle which he said was destroying his daffodil bulbs. The insect proved to be *Rhizophagus perforatus*. I doubted if it was really the cause of the injury to the daffodil roots, and suggested that if only one specimen had been found it was probably on the bulb by accident. I have just received a letter saying : " My gardener found numbers of similar ones in the other bulbs, it was not a single one, as you thought most probable." I am anxious to find out if this insect has previously been recorded as being injurious to bulbs, and shall be very much obliged to any one who will give me information on this point.—G. S. Saunders, 20, Dent's Road, Wandsworth Common, S.W.: *April 9th*, 1896.

Ptini in a hornets' nest.—About fifteen months ago I received from my friend Mr. W. H. Tuck a good sized hornets' nest (*Vespa crabro*) which he had taken from a hollow tree. It consisted of five combs of different sizes, the largest about 8 inches by 6. When it came to hand I examined it carefully, and gave it a good shaking, to dislodge any insects or other inhabitants that it might contain. Besides a few dead things, there fell out a small family of some species of pseudo-scorpions, and a fine ♂ *Ptinus fur*, all of which were alive and active. In the roofs of the combs I noticed several circular holes like those of the *Teredilia*, and these I attributed to other specimens of the *Ptinus*, which I supposed had previously escaped. I did my utmost in the way of shaking to dislodge any further specimens there might be, but without success; and not wishing to damage the nest, I forbore to break up the outer layer of the roof so as to examine what was beneath it, and came to the conclusion, an erroneous one, as the sequel showed, that no other insects were present.

After some weeks, during which no other beetles emerged, I put the nest in my cabinet, and there it remained undisturbed until about a month ago, when I noticed a peculiar appearance about it. Closer examination showed that the walls of the cells had in many places been more or less eaten away, and some were almost entirely destroyed. Casting about as to what could have done the damage, I bethought me of the *Ptinus*, and instituting a careful search throughout the cabinet (a rather large one), I discovered the dead bodies of no less than 153 specimens of *Ptinus fur*, ♂ and ♀, together with two living examples of *Corynetes cæruleus*. The roofs of the combs now showed on their outer or upper surface large numbers of the familiar circular holes, between 80 and 90 being counted in the largest comb. From these, on shaking, there fell out quantities of black dust, like gunpowder. When examined under the microscope, this was found to consist of fragments of the exo-skeleton of insects mixed with frass, apparently the relics of the larval life of the hornets. This powder forms a sort of layer closely compacted just beneath the roof of the comb, and separated from the cells themselves by thin partitions. In was in this layer apparently that the beetles had lived. Although there were plenty of other objects in the cabinet such as *Ptini* usually delight in, these insects had not attacked them, but had confined their depredations to the hornets' nest, though some of them had wandered to the remotest corners of the cabinet. How long the beetles had been out I do not know, but they must have been present in the nest when I received it, perhaps in the larval condition. The *Corynetes* had evidently emerged later than the *Ptini*; and I see that in Fowler's *Coleoptera* this species is said to be sometimes parasitic on *Anobium*; hence it may have been parasitic on *Ptini*. I should be glad to know whether it is usual for *Ptini* to be met with in large nests of *Vespidæ*, and if so, whether they are to be found during the lifetime of the wasps, or whether they do not attack nests till these are vacated by their rightful owners.—E. A. Butler, 39, Ashley Road, Crouch Hill: *April 2nd*, 1896.

Coleoptera at Campbeltown, N. B.—During the time I was attached to H.M.S. "Northampton," the ship on various occasions visited the prosperous little seaport of Campbeltown, in Kintyre, its well-sheltered harbour being eminently suited to her special work. To these visits I owe my first experience of Scottish collecting, which I need not say I found very interesting and productive, though no great rarity in *Coleoptera* turned up, and during our longest stay of six weeks, in June and July last, I was on leave in the South of England for most of the time.

The hills which nearly surround Campbeltown Loch, and on its south side attain in "Bengullion" a height of more than 1200 feet, afford very good collecting-ground within a few minutes' walk of the town. The steep slopes of these hills are for the most part heathy pasture-land, the heather predominating towards their summits, where there are extensive tracts of peat-bog. Except near the shore, where a few Scotch firs and beeches have been planted, trees are scarce, and in the glens a little brushwood, chiefly of hazel, sallow, birch, and mountain ash, is occasionally to be met with. Westward from Campbeltown, a stretch of very fertile arable and pasture land, with patches of boggy heath here and there, extends across the peninsula of Kintyre to Machrihanish Bay. This bay presents a grand spectacle during a westerly gale, as it faces the open Atlantic, and the great oceanic rollers then break on the level sandy beach with a roar which is distinctly audible at Campbeltown. Round the bay extends for several miles the finest range of sand-hills which I have yet seen in the British Islands, and I am sure that they would well repay a much more complete exploration than I was able to give them. As is only to be expected north of the Border, golf here reigns supreme, but the "links" are so spacious that the entomologist finds ample scope for his occupation, without fear of being disturbed by the warning cry of "Fore!"

Among a large number of species of *Coleoptera* met with, the following seem noteworthy:—*Cychrus rostratus*, under stones, occasional; *Nebria Gyllenhali*, rare, one specimen only, under a stone at high-water mark on the beach at Machrihanish; *Dyschirius impunctipennis* and *salinus*, both rare in the same locality, where *Bradycellus placidus* also occurred singly at roots of bent-grass in November, 1895. *Pterostichus niger*, occasional, and *P. vitreus*, not uncommon, under stones, on low as well as on high ground; *P. nigrita*, common in wet places, and varying greatly in size, a curious form with clear red femora occurring rarely; *Anchomenus lævis*, abundant, nearly always very dark, and often of a rich bronze-black colour, but I did not meet with the beautiful blue-black form which sometimes occurs in the north of Ireland; *A. gracilis*, in wet places. *Bembidium rufescens*, *æneum* and *bruxellense*, more or less common in flood rubbish at the mouth of a "burn" which traverses the Machrihanish sand-hills, with *Trechus micros* and *obtusus* rarely; *B. pallidipenne*, at roots of bent-grass in the same locality, plentiful in November, 1894, scarce in the same month in 1895; *Dromius agilis*, rare, under bark.

Haliplus fulvus, plentiful in "Aucha Lochy," a small clear water lake at an elevation of 300 feet, about a mile from Campbeltown; usually found clinging to small pieces of wood, &c., in company with *Hydroporus 9-lineatus*, not rarely. *Hydroporus lepidus*, *obscurus*, *Gyllenhali*, *erythrocephalus*, &c., in peaty pools on high ground; *incognitus*, one, and *obsoletus*, two specimens in flood rubbish at Machrihanish, with *Ochthebius bicolon*, rare. *Agabus Sturmii*, abundant in stagnant water close to the town.

Aleochara brevipennis, very common in moss and damp tufts of grass in November and December, and taken sparingly by sweeping in June; *Encephalus complicans*, rare, in moss; *Ocypus ater*, common under stones on turf walls, &c., with *Philonthus laminatus, scutatus* (rare) and *decorus; Cafius fucicola*, rare, under decaying seaweed on Machrihanish beach, November, 1895; *Acidota crenata*, one only under a stone at a low elevation, September, 1894; *Olophrum fuscum*, sparingly, in tufts and flood rubbish; *Deliphrum tectum*, rare, on the hill tops.

Anisotoma dubia, a few specimens on the sand-hills at Machrihanish, in September, 1894, and *A. ovalis*, one, by evening sweeping. *Necrophorus ruspator*, in carcases; *Silpha opaca*, under stones and in tufts of bent grass, Machrihanish, not common; *S. atrata*, some remarkably small examples in decayed wood and tufts of grass. *Choleva angustata*, in flood rubbish; *C. spadicea*, rarely, and *fusca*, rather commonly, in moss, and *chrysomeloides*, in carcases. *Coccinella* 11-*punctata*, abundant on Machrihanish beach, nearly all the specimens observed having very large and confluent black spots, giving them a very different aspect from southern examples of this abundant species; *C. hieroglyphica*, rare; *Hyperaspis reppensis* and *Antherophagus pallens*, single specimens of each by sweeping.

Aphodius fœtens, nitidulus, sordidus and *rufescens*, all more or less plentiful in sheep's dung at Machrihanish in July, 1895, when *Serica brunnea* was also common on the bare sand in the "bunkers;" *A. lapponum, fœtidus, putridus, depressus* (always black) and *luridus*, on the high ground, and all plentiful except the last, which was scarce and very small.

Sericosomus brunneus, rare, on the summit of "Bengullion;" on the slopes of this hill *Corymbites cupreus* was found sparingly, and *C. quercûs* and var. *ochropterus* in plenty, by sweeping.

Dascillus cervinus, scarce; *Helodes marginata, Telephorus nigricans*, var. *discoideus*, and *Malthodes dispar*, all common by sweeping; *T. paludosus*, rarely, on flowers of mountain ash in June.

Salpingus ater, one specimen apparently to be referred to this species, by sweeping near the town, June, 1895; *Rhinosimus planirostris*, a remarkably large form rarely under beech bark.

Otiorrhynchus blandus, sparingly under stones on turf walls, and on Machrihanish beach in company with great numbers of *O. atroapterus*, and a few specimens of *ligneus* and *ovatus*; *Tropiphorus tomentosus*, occasionally in flood refuse and by sweeping; *Phyllobius calcaratus*, locally common by sweeping, in June; *Barynotus Schönherri*, under stones, and *elevatus*, by sweeping, both scarce. *Sitones lineellus*, this pretty and distinct little species occurred in plenty in November, 1894, and again in the same month in 1895, by shaking out roots of bent-grass on the sand-hills at Machrihanish, in company with *Ceuthorrhynchus rugulosus* and other common species of the latter genus. *Liosoma ovatulum*, var. *collaris*, in flood refuse at Machrihanish, rare, in company with the type form. *Bagöus frit*, one specimen in November, 1894, clinging to a piece of wood in Aucha Lochy, an unexpected capture so far north. *Anthonomus comari*, rare, on sallows, Bengullion, accompanied by numbers of *Orchestes stigma*. *Phytobius* 4-*tuberculatus*, very abundant in rather dry tufts of grass, November, 1894, and *P. canaliculatus*, in great profusion in Aucha Lochy, clinging to weeds and small pieces of wood, at the same time, but like the last-mentioned species, scarcely seen at all in 1895.—JAMES J. WALKER, 23, Ranelagh Road, Sheerness: *March* 11*th*, 1896.

Procas armillatus, F., near Chatham.—I had the good fortune to shake a fine specimen of this very rare weevil out of a dry tuft of grass on the slopes of Darland Hill, near Chatham, on the afternoon of the 11th inst. As far as I am aware, no capture of this species in Britain has been recorded for nearly forty years. A subsequent visit to the same spot failed to produce more examples.—Id.: *March 26th*, 1896.

Medon apicalis, Kraatz, in Windsor Great Park.—A single specimen of this apparently very rare Staphylinid occurred to Mr. Champion and myself on April 4th in the wet rotten wood of a large beech stump in Windsor Great Park. With it we found also *M. obsoletus*, Nordm.—Id.: *April 7th*, 1896.

Dytiscus dimidiatus near London.—Early in April, 1895, I was fortunate enough to take a female of the above rare species in a ditch near Merton, Surrey. Two or three hours' work at the same place in the present month failed to turn up any more. The insect has never before been taken near London, I believe; and its only recorded locality for many years past has been Askham Bog.—E. A. Newbery, 12, Churchill Road, Dartmouth Park, N.W.: *April 14th*, 1896.

Early Perlidæ.—Last year I contributed a short notice on the first appearances of *Perlidæ* after a winter of exceptional severity. It may be useful, if for nothing more than the sake of comparing dates, to say a few words on the same subject after a winter of abnormal mildness.

This year *Perlidæ* were seen for the first time on February 22nd. The species were *Capnia nigra*, Pict., *Tæniopteryx nebulosa*, L., and a *Leuctra*. This is certainly the earliest record for these insects in this district, although on one previous occasion, at least, *T. nebulosa* was out on the closing days of February.

After wonderfully fine and mild weather in the earlier part of the month during which no *Perlidæ* were seen, the 22nd was cold with heavy sleet showers, and was the beginning of a spell of cold weather with frequent hard frosts and falls of snow. I had no favourable opportunity of collecting again until March 7th; in the morning the ground was covered with snow, and the frost hard, but as the day wore on it became mild and sunny, and *Nemoura præcox* came out in numbers; *T. nebulosa* was also taken.

It will be observed that the first of the above-mentioned dates was cold following mildness, while the second was just the reverse, but both agreed in the presence of melted snow in the waters. When Mr. King and I were in Rannoch last April, the River Gaur was surcharged with melted snow, and these spring *Perlidæ* were coming out in myriads. It almost appears that the presence of melted snow in the waters has a quickening influence to some extent acting independently of otherwise favourable or unfavourable weather conditions.—Kenneth J. Morton, Carluke, N. B.: *March*, 1896.

Extinction of British Butterflies.—It is announced that at the Meeting of the Entomological Society of London on May 6th a discussion will take place as to the best means of preventing the extinction of certain British Butterflies.—Eds.

Reviews.

Studie o Coccidech, i (a Study in Coccids): by Karel Šulc. F. Řionáce, Prague. 1895. 8vo, pp. 1–27; 3 plates.

This publication is an extract from the Transactions of the Institute for Comp. Anat. and Zoology, Bohemian University, Prague, and is issued separately. It consists of a descriptive essay of three species of Coccids found in Bohemia, one of which also occurs in Britain. 1. *Syngenaspis* (n. g. allied to *Parlatoria*) *parlatoriæ* (n. sp.), on the leaves of *Pinus abies*. 2. *Mytilaspis Newsteadi* (n. sp.) on the leaves, never on the twigs, of *Pinus sylvestris*. 3. *Cryptococcus* (Doug.) *fagi*, Baerensprung, on and under bark of beech trees, the description of this obscure species being amended from that given by Baerensprung and Douglas. Of the plates one illustrates the magnified appearance of the scales of the first two species, the other two, of double size, give still more enlarged views of the distinctive characters of the new genus and of each of the three species mentioned, all from the fine drawings of the author. The whole constitutes a valuable addition to the scientific knowledge of the *Coccina*.

This work is one of many signs that the number of the students of the Coccids is increasing, and that this Division of the *Homoptera*, now that the wonders of its minute structures and its functions are being discovered and illustrated, is no longer to be regarded as neglected. The publication is in the Bohemian language, but a full translation of it in English is appended, and this will make it more extensively welcome and useful.

Our Country's Butterflies and Moths, and how to know them: by W. J. Gordon, with 1000 examples in colour by H. Lynn, and many original diagrams. 150 pp., crown 8vo. London: Day and Son, and Simpkin, Marshall, Hamilton, Kent and Co.

Yet another "popular" work on British *Lepidoptera*! The author informs us that "it is a book of identification," so we turn to the 33 chromo-lithographic plates on which are 1000 crowded figures. Down to the end of the *Geometridæ* it is probable that fully half the figures will serve for identification; some are excellent; the drawing is mostly good, the fault lies in having attempted to make a limited number of colour-stones serve for all the figures on a plate; sometimes (*Eupithecia*, for instance) a whole series of figures are useless. But the book is dirt cheap at the price. The three plates devoted to *Pyralidæ* and some *Tortrices* and *Tineina* had better have been omitted, the *ensemble* is not satisfactory. As to the text: we are told by the author that "at least half of the accepted species" (of *Lepidoptera*) "are of no more relative value than the varieties of the horticulturist," so, although we do not remember to have heard his name previously, we abstain from criticism, for no one but a profound student would be justified in making such a statement.

Societies.

The South London Entomological and Natural History Society: *March 26th*, 1896.—R. South, Esq., F.E.S., President, in the Chair.

Mr. A. E. Eldridge, of 50, Alpha Road, Surbiton, and Mr. F. A. Bowen, of 11, Buckland Crescent, Hampstead, were elected Members.

Mr. F. Enock, F.L.S., gave an instructive lecture with lantern illustrations on "The Life-History of the Tiger Beetle (*Cicindela campestris*)," being an epitome of his very numerous observations on this insect, both in nature and confinement, during the last five years. Mr. Clark exhibited a number of photomicrographic slides, many of which were prepared from specimens lent by Members of the Society, and a fine specimen of the Röntgen ray photography. Many visitors were present.

April 9th, 1896.—The President in the Chair.

Mr. R. Adkin exhibited two specimens each of *Margarodes unionalis* and *Mecyna polygonalis*, which were taken at Deal in 1877 by the late Mr. Tugwell, and contributed notes on the occurrence of these and other species of *Pyralides*. Mr. Barrett, on behalf of Mr. Capper, of Liverpool, some 400 drawings coloured by hand of the remarkable varieties existing in his collection. Mr. Tunaley, a lantern for entomological purposes, invented by himself, to obviate the inconvenience and smell of oil. It was thought that it would be, when completed, a capital success. Mr. South, a banded specimen of *Vanessa urticæ* taken alive in his house at Tooting on March 22nd. Mr. Williams, a living specimen of *Bombylius medius*. Mr. Turner, an apparatus sent to him for exhibition, for taking moths from a lamp; it could be put on the end of a stick and worked by means of a string. Mr. McArthur, a bred series of *Hypsipetes trifasciaria*, from Hoy; they were of a rich chestnut colour, and had been reared on heath; this was considered to be a most unusual food. Mr. Edwards, a number of exotic *Rhopalocera*, which were examples of mimicry.—Hy. J. Turner, *Hon. Secretary*.

Entomological Society of London: *March 18th*, 1896.—Prof. Raphael Meldola, F.R.S., President, in the Chair.

Mr. T. A. Gerald Strickland, of Oakleigh, near Ascot, Berkshire, was elected a Fellow of the Society.

Mr. C. G. Barrett exhibited a series of drawings of varieties of British *Lepidoptera* in the collection of Mr. S. J. Capper. The drawings, which were beautifully executed, were by Mr. S. L. Mosley, of Huddersfield, and comprised 389 figures, representing 139 species, of which 33 were butterflies and 50 moths. Mr. Barrett stated that none of the varieties exhibited had been obtained by breeding under artificial conditions for the purposes of experiment, but they were all natural varieties due to the influence of the climate, soil, &c. Mr. Porritt added that Mr. Capper had made a special collection of the Yorkshire forms of *Arctia lubricipeda*. Mr. J. J. Walker, R.N., exhibited a specimen of *Procas armillatus*, taken on Darland Hill, near Chatham, during the present month. Herr Jacoby exhibited a specimen of *Loxoprosopus ceramboides*, Guér., from Brazil. Mr. E. E. Green exhibited the eggs of a species of *Locustidæ* extracted from the stem of a young Cinchona tree at Punduloya, Ceylon. He said the species of the parent insect was undetermined; it was possibly either a *Cymatomera* or a *Cyrtophyllus*, both of which possess large sabre-shaped ovipositors. A slit half an inch deep and more than two inches long had been cut into the hard wood, in which the eggs had been symmetrically deposited, edge to edge, with the coloured part inwards. The greater part of each egg was of fine texture, and coloured green; but at the extremity from which the young insect would make its exit the egg shell was soft, pliant, and beautifully reticulated. The row of flattened green eggs lying side by side resemble an acacia leaf, but as they are concealed within the stem the resemblance was apparently without motive. It seemed curious that as the eggs were embedded they should be brightly coloured. Mr. McLachlan and Dr. Sharp made some remarks on the subject. Mr. Green read a short paper, entitled, "Notes on *Dyscritina longisetosa*, Westw." He remarked that drawings of the species had been exhibited by him at a recent meeting of the Society. Dr. Sharp said Mr. Green seemed to think that the insect was an earwig, but he could not accept it as belonging to the *Forficulidæ*. He thought that further specimens for examination were required before attempting to determine its position, which was quite doubtful at present. Mr. W. F. H. Blandford communicated a paper, entitled, "Descriptions of New Oriental *Scolytidæ*."

April 1*st*, 1896.—The President in the Chair.

Mr. Luke Bishop, F.R.G.S., of 3, Tokenhouse Buildings, E.C.; and Mr. Robert Nesham, of Utrecht House, Clapham Park, S.W., were elected Fellows of the Society.

Mr. Champion exhibited, on behalf of Mr. Blatch, specimens of *Quedius riparius*, Kellner, captured in February last on the banks of running streams at Porlock, Somerset. He added that Mr. Waterhouse informed him that he had seen specimens of the *Quedius* from Wales and Scotland. Mr. Champion also exhibited a small collection of *Coleoptera* made by Mr. O. V. Aplin in Southern Tunis during various expeditions inland from Gabes. The collection included some interesting *Tenebrionidæ* of the genera *Pimelia* and *Adesmia*. Mr. Aplin noticed specimens of these insects impaled by shrikes. Dr. Sharp, Mr. R. Trimen, and Mr. R. McLachlan made some remarks on the subject of the impalement of insects by birds. Mr. Goss exhibited for Mr. Cameron, an apterous male of *Mutilla contracta* taken by Mr. Rothney at Barrackpore, India. The specimen was stated to be the first recorded instance in this species of a wingless male. Dr. Sharp called attention to the fact that at a recent meeting of the Society (March 20th, see Proc., 1895, p. x) a specimen of a supposed dimorphic form of one of the species of *Dytiscus* was examined, and Professor Stewart enquired whether any anatomical examination had been made of the sexual organs. He said that in the Comptes Rendus Soc. Bordeaux, 1894, there was an account of the examination of the sexual organs of the supposed second form of *D. marginalis* by Mons. Peytoureau, who came to the conclusion that it was really a distinct species. Dr. Sharp suggested that there must be some doubt as to M. Peytoureau's conclusion as there was a series of these double forms in connection with this genus, and it would be a very extraordinary fact if in one case the second form should be a distinct species, while in other species of the same genus the form corresponding to it should be only a variety. Prof. Poulton exhibited examples of the type labels now in use in the Hope Collection at Oxford, and illustrated their employment by projecting on the screen, by the lantern, a photograph of the Westwood types of

African *Eusemiæ*. He said that such labels, having been once set up in type, could be reproduced in electrotype very cheaply and efficiently. Black ink was considered better than red on account of its greater permanence. Mr. Verrall said he was of opinion that no species should ordinarily be described from a single type, but from many specimens, and he wished every so-called "type" could be destroyed as soon as a species had been described from it. Mr. Blandford explained the system of labelling types in the Brussels Museum. Dr. Sharp, Prof. Meldola, Mr. McLachlan, and Prof. Poulton continued the discussion. Mr. Blandford exhibited a series of lantern slides showing the uses to which photography could be put in entomological illustration. Prof. Meldola expressed surprise that photography had hitherto been so little employed in the illustration of works of Entomology. Prof. Poulton read a paper, entitled "On the Courtship of certain European *Acridiidæ*." The Author said that these observations upon the courtship of Swiss *Acridiidæ* were made in exceedingly favourable weather at the end of August and beginning of September last year. He was much indebted to Mr. F. Jenkinson, of Cambridge, and Mr. V. F. Dickens for many independent observations and valuable confirmation. Prof. Poulton stated that Dr. Sharp had been kind enough to name the species referred to in the paper. Prof. Meldola expressed great interest in the paper, and said that the observation of the habits of insects in the field seemed to be much neglected by many Entomologists. Dr. Sharp remarked that there was a greater variety in the organs capable of producing sound in the *Orthoptera* than was generally supposed. Mr. G. F. Hampson read a paper, entitled, "On the Classification of Three Subfamilies of Moths of the Family *Pyralidæ*: the *Epipaschiinæ*, *Endotrichinæ*, and *Pyralinæ*."—H. Goss, *Hon. Secretary*.

AN ANNOTATED REVISION OF THE BRITISH *CHRYSIDIDÆ*.

BY THE REV. F. D. MORICE, M.A., F.E.S.

I have for some time felt convinced that the accepted list of British Chrysids stood in need of revision. Shuckard's description of our native genera and species, published so far back as 1837, was but little improved upon by F. Smith in his "Monograph" (Ent. Ann., 1862), nor can it be said that much additional light has been thrown on the subject by Marshall's "Catalogue" (1872). Of late years immense progress has been made in the study of continental and exotic Chrysids. Mocsáry's Encyclopædic "Monographia Chrysididarum orbis terrarum universi" appeared in 1889; and even this great work is being in part superseded by the Vicomte Robert du Buysson's magnificent volume now approaching completion in André's "Species." But, in the meantime, our knowledge of the British Chrysids seems to have remained, practically, where Smith left it. His identifications have been accepted, with little or no question, both here and abroad. Not a single fresh insect has, I believe, been added to our list; nor has any one, to my knowledge, attempted to deal with the not unnecessary question, whether all the insects recorded by him and by Shuckard as British have really a claim to be so regarded.

With the kind assistance of Mr. Waterhouse, I have lately been enabled to examine thoroughly and compare with well-determined continental specimens the national collection—now at South Kensington—so frequently referred to by Smith and Shuckard. Further, Dr. Mason, who possesses Smith's own collection, has had the great kindness to send me not only that collection entire, but all the other Chrysids in his possession, and has allowed me to forward any dubious insects for the opinion of M. du Buysson. Messrs. A. Beaumont, W. H. Harwood, and E. Saunders have also been good enough to put all their Chrysids at my disposal, so that, with my own British and continental collections, I have had a good deal of material to assist me in the enquiry which forms the subject of these notes.

It will be best, I think, to start from Smith's list (Ent. Ann., 1862, p. 82) as a basis, and put what I have to say into the form of notes upon it, the name standing at the head of each note being that adopted by him.

Genus Cleptes.

C. semiaurata.—M. du Buysson has given reasons for separating *C. semiaurata*, Linn., and *C. pallipes*, Lep., as distinct species. There is a difference in the structure of the anterior coxæ (see "Species," vi, plate 6). Further, *pallipes* has always blue or violet metallic reflections, usually very conspicuous, in the black apex of the abdomen, which are entirely wanting in *semiaurata*, and the legs, especially the tibiæ, of *pallipes* are nearly always much lighter in colour, being in the main pale testaceous, while those of *semiaurata* are almost black. All the British specimens I have seen belong, without exception, to *pallipes*. Whether the true *semiaurata* is also British is a question which may be settled, if other collectors possessing insects so named will examine their specimens, and record the results. On referring to the descriptions of *semiaurata* given by earlier authors, I find that the vast majority are clearly referable to *pallipes*. Linné's own description does not seem to me clear. He calls the apex "nigro" simply, not alluding to the blue, which he could hardly have failed to notice in *pallipes*; but on the other hand he speaks of the rest of the abdomen and the tibiæ as "ferrugineis," which, though vaguely so, seems rather suggestive of *pallipes*. Fabricius, Panzer, Shuckard, Wesmael, Dahlbom, Smith, and Frey-Gessner all notice the blue on the abdomen and the pale legs of the insects they call *semiaurata*, which must accordingly be *pallipes*. Thomson's "pedibus totis rufis" (of the ♀) points in the same direction; and if his species had possessed the singular coxæ of *semiaurata*, he would surely have noticed a character so exactly after his own heart, while similarly one would almost expect *à priori* that this author would not, as he does not, take notice of the precise colour of his insect's apical segments. Only Chévrier gives a description which clearly indicates the true *semiaurata*, ♀, and even he seems to have known no male but that of *pallipes*. Lepelletier and Brullé (Suites à Buffon, 1836—1846) do not describe the species of *Cleptes*, but in my copy of their work there is a somewhat mysterious figure (in pl. 37) called *Cleptes semiaurata*, in which the legs throughout and a narrow edge at the apices of the 3rd and 4th abdominal segments are coloured blue! This suits neither insect, and the plate is badly coloured in other respects. It is difficult to believe that it is meant for *pallipes*, yet neither is it like *semiaurata*. The prothorax shows no row of punctures at the base; In short, it is, I should say, unrecognisable. Finally, Mocsáry's *semiaurata* includes the females of both species, but his male is undoubtedly that of *pallipes*. Our insect, then, is evidently that which most authors have identified with *semiaurata*, Linn. Yet, on such evidence as is at present available, I believe it will be safest to follow du Buysson in applying that name to the (apparently) rarer insect, that without blue on the abdomen, and to call our own species by the name which, in that case, must claim priority, viz., *pallipes*, Lep.

C. nitidula.—This species differs from the last in not having a transverse punctured line towards the base of the prothorax. The females are also differently coloured, and can hardly be mistaken; but I find two males of *nitidula* mixed with those of *pallipes* in Smith's collection. The three males which are placed there under *nitidula* are correctly determined; but they are by no means normal specimens, having exceedingly dark legs, and the apex of the abdomen much more vividly blue than is usual in this species. M. du Buysson has kindly examined these insects at my request, and confirms me in naming the whole five *nitidula*, Fab.

Genus Elampus.

E. Panzeri.—This is now called *Notozus Panzeri*, Fab. (for genus *Notozus*, Först., see "Species," vi, p. 96). It was formerly considered a great rarity, but is really pretty common in Surrey on heaths, &c., and is frequently taken by sweeping. The very similar *N. productus*, Dhb., with abdominal apex much less deeply excised, is quite likely to turn up in this country, but I have not yet come across it.

Genus OMALUS.

This is the genus to which the name *Elampus*, Spin., is now applied. Its most common species is *E. auratus*, Linn., which abounds everywhere. Mocsáry quotes *E. bidentulus*, Lep.—a similarly coloured insect, but with the sides of the apical segment strongly bisinuate—as British, on the authority of Westwood. I think, however, that Westwood's *bidentulus* was that of Shuckard, viz., *æneus*, Fab. (see note on next species). There is no reason why the true *bidentulus* should not also be British, but it is not in any of the collections that I have seen. It might easily be passed over for a small *auratus*.

O. cæruleus.—The insect so named in the Museum collection, and also by Smith in his own collection and in the Monograph, is not the *cæruleus* of Dahlbom (see note on next species), but the *æneus* of Fabricius.

O. nitidus.—This is called *nitidus* in Smith's collection, but *æneus* in the Museum. Smith gives *æneus* as a synonym of *nitidus* in his Monograph. This, and not the last species, is the true *cæruleus*, Dhb., but its right name, according to Mocsáry, is *violaceus*, Scop. M. du Buysson, however, retains the name *cæruleus*, Dhb., which will be explained hereafter, no doubt, when he comes to discuss the synonymy. It will be seen, therefore, that Smith has reversed this insect and the last, identifying the true *æneus* with *cæruleus*, and the true *cæruleus* with *æneus*. The two species are very distinct, *violaceus*, Scop. (= *cæruleus*, Dhb., = Smith's *æneus*) having a more coarsely punctured thorax, and a very slight though broad apical incision, while *æneus*, Fab. (= *æneus*, Dhb., = Smith's *cæruleus*) has an exceedingly smooth and shining thorax, and the abdomen strongly notched at its apex.

Genus HEDYCHRUM.

The insects embraced under this name in our collections, and in Mr. Smith's Monograph, belong to three distinct genera, viz., *Holopyga*, Dhb., *Hedychridium*, Ab. Buyss., and *Hedychrum*, Latr. Mocsáry, indeed, has re-united the first two under the name *Holopyga*, but on grounds* which, I venture to think, would lead rather to a uniting of *Hedychridium* with *Hedychrum* (which he does not propose) than with *Holopyga*. Du Buysson, however ("Species"), gives quite convincing reasons for keeping them distinct.

H. lucidulum.—This is the only true *Hedychrum* which is certainly British. It has been correctly determined as *lucidulum*, Fab., though Scopoli's name *nobile* is adopted as prior by Mocsáry.

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* See Monographia, p. 133. He says that some kinds of true *Hedychrum* have the unguicular tooth remote from the apex of the claw.

H. cærulescens.—Two specimens in the National Collection bear this name, given to them by Shuckard and retained by Smith. They differ, however, not only in species, but in genus. One is *Hedychrum chalybæum*, Dhb., the other is *Holopyga chloroidea*, Dhb. (=*H. curvata*, Först., *sec.* Mocsáry). I fear it is exceedingly doubtful whether either species is really British. Smith says of these two specimens, but giving no authority for the statement, "taken in Devonshire," while Shuckard, writing twenty-five years before, of the same specimens, tells us expressly, "I do not know any locality for them." No other example of either insect is known to have been found in England; they bear no indication of locality; and as it is known (see Smith, *l. c.*, p. 81) that some of Dr. Leach's Italian captures have strayed into the National "British" Collection, there seems strong reason to suspect that these isolated insects are among them. In the absence of other grounds for their retention, I fear they must disappear from our list.*

H. fervidum.—The insect so called by Smith and Shuckard is, as their descriptions show, quite unlike the true *Holopyga fervida* of Fabricius and Dahlbom, having the vertex entirely blue. Smith's own single specimen in his collection is, I have not the slightest doubt, a normal *Holopyga gloriosa*, Fab., with red pro- and mesothorax, scutellum, *and post-scutellum.* The one specimen in the Museum is, I believe, a curious variety of the same species, having a blue head *and post-scutellum*, a red pro- and mesothorax and scutellum (*cf.* Smith's account of his *fervidum* in Ent. Ann., *l. c.*). Shuckard says that the late Mr. W. W. Saunders took several specimens near London. One of these captures I believe to be an insect now in my own collection, given me by Mr. E. Saunders. It is in very bad condition; but, I think, clearly recognisable as *Holopyga gloriosa*, var. *ignicollis*, Dhb. (*i. e.*, it has pro- and mesothorax only, golden). This variety has a most striking, though superficial, resemblance to the ♀ of *Hedychrum nobile*, Scop. (= *lucidulum*, Fab.). The above three insects, the only supposed British examples I have seen, have all distinctly the neuration and other characters of *Holopyga*, and not of *Hedychrum*. I have carefully compared Dr. Mason's specimen and my own with continental specimens of *fervida* and *gloriosa* (and its varieties), and can say with confidence (1) that Smith's "*Hedychrum fervidum*" is a *Holopyga*, (2) that it is not *H. fervida*, Fab., and (3) that its punc-

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* In Mr. Parfitt's List of Devonshire *Hymenoptera*, F. Smith is said to have taken "*Hedychrum cærulescens*" at Sidmouth, and a reference is given to Ent. Ann., 1872, p. 102. What, however, Smith actually records there is "*Hedychrum cærulea*" (*sic !*)—a slip, probably, for *O. cæruleus*, *i. e.*, *E. æneus*, Pz. (see above). In Smith's own collection there is nothing called *cærulescens*, but a specimen of *E. æneus* (no doubt, the one in question), called *cæruleus*, and ticketed "Sidmouth."

turation, neuration, relative length of pro- and mesothorax, and all such characters as can be seen in the present condition of the insects representing it, agree precisely with those of *H. gloriosa*, Fab. (The claws of the tarsi in my own specimen are so disguised in dirt, that I have found it impossible to examine them satisfactorily.) Smith's further identification of his *fervidum* with *rutilans*, Dhb., though accepted by Marshall, is simply an additional error. True *rutilans*, Dhb., of which I have many continental specimens, is a totally different insect, and a genuine *Hedychrum* (with sharp lateral spines on the apical segment), while our species is an unmistakeable *Holopyga*. It is unfortunate that none of the above three specimens bears any ticket of locality. Still I am inclined to trust Shuckard's statement about Mr. W. W. Saunders' captures, and to hope, therefore, that the species is really British. For *H. fervidum*, then, we may substitute in our list *Holopyga gloriosa*, Fab.

Hedychrum roseum.—Of this species I need only remark that it belongs to the genus *Hedychridium*, and should be called *Hedychridium roseum*, Rossi. It cannot be confounded with anything else.

Hedychrum ardens.— Under this name two species have been mixed. All the specimens in the Museum, and most of those in other collections, belong to *Hedychridium minutum*, Lep., which is identified by Mocsáry with *ardens*, Coq. This species, then (our common one) may retain the name *Hedychridium ardens*, Coq. (= *minutum*, Lep., Dhb., etc.). But, in Smith's collection, *ardens* includes two specimens of *Hedychridium integrum*, Dhb., an insect not hitherto recorded as British, but of which I possess three specimens taken at Chobham by Mr. E. Saunders. It is not unlike *ardens*, though when once recognised it is easily distinguishable, even by its coloration (which is somewhat darker) and general appearance. It has, however, a much more finely punctured thorax, and the abdomen is fringed with rather long hairs towards the apex, where *ardens* has only a short pubescence. Good figures of *integrum* and *ardens* (there called *minutum*) may be seen in Dahlbom (Hym. Europ., plate iv). There is, as said above, no specimen of *integrum* in the Museum, and I suspect it is local, if not rare, in England; but I have taken it freely in Switzerland, and it seems to occur all over the Continent.

Genus CHRYSIS.

Of the first six species recorded by Smith in this genus, viz., *ignita*, *Ruddii*, *fulgida*, *bidentata* (= *viridula*, Lin.), *succincta*, and *cyanea*, little need be said here. All have been correctly determined in the Monograph (excl. syn.), and all are unquestionably British insects. *Ruddii*, Shuck., = *auripes*, Wesm., but Shuckard's name has certainly the priority. *Viridula*, Linn. (not a very happily chosen name), is prior, according to Mocsáry, to *bidentata*; but in adopting the former name he has not been followed by du Buysson. *Ruddii*, *fulgida* and *succincta* seem to be rare in England. As additional localities to those given by Smith I may mention Ilfracombe for *Ruddii* and Ipswich for *succincta*. The ♀ of the extremely common and variable *ignita* may, I believe, always be recognised by its puncturation, which is irregular, and conspicuously less close on the apex of the 2nd abdominal segment than on the base of the 3rd. This character distinguishes it at once from several closely allied continental species, which are quite likely to be found some day in England, but for which I have hitherto looked in vain. It is easy to confound the ♂ with that of *Ruddii*, and I think Smith has done so in his collection, but I believe that *Ruddii* has invariably, and *ignita* never, distinctly red reflections on the legs seen from beneath, and that the ventral surface in *Ruddii* is always, in part, coppery-red, while it is only occasionally so in *ignita*.

C. austriaca.—This is a most unfortunate misidentification of Shuckard's, in which Smith and Marshall have followed him, with the result of misleading all the later writers, including Mocsáry. No one who has seen the smooth and brilliant abdominal surface of the true *austriaca*, Fab., and noticed its comparatively slight pubescence, could possibly mistake our British species for it. The insect called *austriaca* in all the collections I have seen is certainly *pustulosa*, Ab.; and it is clear from Smith's and Shuckard's descriptions that their *austriaca* was the same. Smith gives *refulgens*, Spin., as a synonym for our insect, but that is a quite different species again, with an acutely conical post-scutellum, and is unlikely to be found in England. It is true that *austriaca*, Fab., is often found in the same localities as *pustulosa* on the Continent, but it has as yet no claim to appear in the British list, where *pustulosa*, Ab., must be substituted for it.

C. ornata.—The solitary specimen described by Smith, taken by Mr. Hewitson at Bristol, is still in Dr. Mason's collection. It differs so much from normal *bidentata* by its extremely short pubescence and other striking characters noted in my Table (below), that I should have thought it impossible to identify it with that species. M. du Buysson, however, to whom I sent the insect, informs me that it is a ♂ of the variety of *bidentata* hitherto known as var. *sicula*, Ab., which must now be called var. *ornata*, Sm.

C. bicolor.—Even before I had seen Smith's two examples in Dr. Mason's collection I felt sure from his account that Marshall's Catalogue was wrong in identifying this species with *osmiæ*, Thoms., and that it would prove to be rather the *hirsuta* of Gerstæcker. Having now examined the actual insects I find my expectation confirmed. The black hairs at the apex of the abdomen are distinctly visible in both specimens; still, to make assurance doubly sure, I thought it prudent to submit one of them to M. du Buysson, and can now state on his authority that it is *hirsuta*, Gerst. The *bicolor* of Dahlbom was evidently a mixed species, including both *osmiæ*, Thoms., and *hirsuta*, Gerst. (A specimen of the latter at Munich is labelled by Dahlbom "*bicolor*," see "Species," vi, p. 327). The name *bicolor* was preoccupied, having been given by Lepelletier to an insect now recognised as a variety of *succincta*. In Smith's synonymy *bicolor*, Dhb., is identified with *austriaca*, Zett., but the latter (*teste* Mocsáry) is really *pustulosa*, Ab. It is curious that Smith should have increased the confusion about our species by saying that the radial cell is "open at the apex." It is not so in either of his specimens. There is no example of *C. osmiæ*, Thoms., among Smith's insects; but I have found one specimen of it, mixed with *ignita* and *pustulosa*, in another part of Dr. Mason's collection. It belonged formerly to the late Sir S. S. Saunders, and bears a ticket in his hand signifying apparently that he received it from Mr. Edward Saunders. The latter tells me that he has no recollection of the insect in question, but feels convinced that if it came from him it must have been taken in England. I hope, therefore, that I am justified in including it in our list. This insect, also, I have submitted to M. du Buysson, and he returns it as a large specimen of *osmiæ*, Thoms.

C. neglecta.—This insect was first discovered by Shuckard, whose name for it has been universally adopted; and it is interesting as the only certainly British Chrysid, except *Ruddii*, which, when first found, was an addition to the general European list. It is common abroad, and not rare in England. I have only found it among the burrows of *Odynerus spinipes*, on which, as Smith records, it is parasitic.

Euchræus quadratus.—The Museum has a ♂ of *E. purpuratus*, Fab., under the above name. Smith records it as very doubtfully British, and it is really almost inconceivable that this Mediterranean species should occur in our country, though I have taken it at Sierre in Switzerland, which is probably about the limit of its distribution in our direction. Probably it is an Italian capture of Dr. Leach's.

Chrysis cæruleipes, Fab.—Shuckard describes this insect as British, but Smith is no doubt right in rejecting it. There is one specimen in the Museum, ticketed "*cuprea*," and placed apart from the rest of the collection. Smith says he has ascertained that Dr. Leach took it in Italy; and no doubt this is the most probable account of its origin. I have several specimens of it from South Europe; but it is quite unlikely to occur with us, being parasitic on small species of *Osmia*, which have not been found in our latitudes.

I will now conclude with a Revised List and Synoptic Table of such *Chrysids* as seem to me to have a satisfactory claim to rank as British, excluding the probable foreigners admitted by Smith or Shuckard, viz., *H. cærulescens*, *E. purpuratus*, and *C. cæruleipes*. Where Smith's name has to be altered, I give it as a synonym in italics, but it seems needless to occupy space with a complete synonymy, which can be found worked out at length in Mocsáry, and will soon appear also in "Species." Only, in cases where Mocsáry and du Buysson adopt different names, and the latter has not yet given the reasons for his choice, I have mentioned both names, treating them provisionally as equivalent, and putting Mocsáry's name first.

LIST.

Genus Cleptes, Latr.

1. pallipes, Lep.
    semiaurata, Sm.
2. nitidula, Fab.

Genus Notozus, Först.
Ellampus, Sm.

1. Panzeri, Fab.

Genus Elampus, Spin.
Omalus, Sm.

1. violaceus, Scop., = cæruleus, Dhb.
    æneus, } Sm.
    nitidus, }
2. æneus, Fab.
    cæruleus, Sm.
3. auratus, Linn.

Genus Holopyga, Dhlb.
Hedychrum, Sm. (in part).

1. gloriosa, Fab.
    fervidum, Sm.
    do. var. ignicollis, Dhlb.
    do. var. ? (in Brit. Mus.).

Genus Hedychridium, Ab., Buyss.
Hedychrum, Sm. (in part).

1. integrum, Dhlb.
    ardens, Sm. (in part).
2. ardens, Coq., = minutum, Lep.
3. roseum, Rossi.

Genus Hedychrum, Latr.

1. nobile, Scop., = lucidulum, Fab.
    lucidulum, Sm.

Genus Chrysis, Linn.

1. succincta, Shuck.
2. pustulosa, Ab.
    austriaca, Sm.
3. hirsuta, Gerst.
    bicolor, Sm.
4. osmiæ, Thoms.
5. cyanea, Linn.
6. succincta, Linn.
7. viridula, Linn., = bidentata, Linn.
    do. var. ornata, Sm. (= var. sicula, Ab.).
8. fulgida, Linn.
9. Ruddii, Shuck., = auripes, Wesm.
10. ignita, Linn.

The names of *C. pallipes*, *E. violaceus*, *H. gloriosa*, *H. integrum*, *C. pustulosa*, and *C. hirsuta*, appear in this list, for the first time, as those of British insects, but the necessary sinking of others in Smith's list leaves us with only 21 ascertained species against his 22. There are good grounds for hoping that at least three or four species may still turn up, if collectors of these beautiful insects should ever become more numerous in England. I would strongly urge such not to "card" their specimens, as this frequently conceals important characters, and sometimes makes it quite impossible to determine the species or sex of an insect. I hope that the following Table will render it a task of no great difficulty to determine most British specimens, provided they be so set that the characteristic parts can be properly seen; and I shall be exceedingly glad to see any specimens which their possessors cannot distinguish by means of it, as it is quite likely that they may belong to species not hitherto recognised in this country.

SYNOPTIC TABLE OF BRITISH CHRYSIDS.

1. Abdomen somewhat concave beneath, its dorsum showing three segments only in either sex—2.
Abdomen convex above and below, dorsum showing four segments in ♀ and five in ♂ .... Genus CLEPTES.
Prothorax with a transverse punctured line near and parallel to its basal edge *pallipes*.
Prothorax without transverse basal line as above ... .*nitidula*.

2. Post-scutellum not produced into a long spine—3.
Post-scutellum produced into a long spine. Abdomen with deep triangular incision at apex ... .NOTOZUS *Panzeri*.

3. Abdomen elongate, a transverse row of fossulets near its apex, beyond which row the dorsal surface of the segment drops to a lower level .. Genus CHRYSIS—12.
Abdomen ovate or nearly round; no fossulets on apical segment, which is convex to its apex—4.

4. Abdomen not incised at apex—7.
Abdomen distinctly incised at apex ....Genus ELAMPUS—5.

5. Mesonotum very smooth and shining ....*æneus*.
Mesonotum punctured, not smooth and shining—6.

6. Apical incision long, triangular or lancet-shaped ....*auratus*.
Apical incision wide but very short, inconspicuous ....*violaceus*.

7. Prothorax distinctly longer than mesonotum. Upper basal nervure in superior wing hardly incurved .. .. Genus HEDYCHRUM—11.
Prothorax not longer than mesonotum. Upper basal nervure bent sharply inwards, forming a distinct angle—8.

8. Radial cell open at apex. Claws of tarsi with several teeth along the lower edge, a large one close to apex ....HOLOPYGA *gloriosa*.
Radial cell closed at apex. Claws of tarsi with one small tooth only on lower edge, at some distance from the apex ....Genus HEDYCHRIDIUM—9.

9. Abdomen pale rosy-testaceous, like pink coral, not metallic, hardly shining; thorax wholly green or blue .... *roseum.*

Abdomen very brilliant, metallic, colour deep; thorax not wholly green or blue—10.

10. Thorax somewhat smooth; abdomen with long scattered hairs at apex .. *integrum.*

Thorax coarsely punctured; abdomen merely pubescent at apex......... *ardens.*

11. No part of thorax fiery-red or golden .... *nobile*, ♂.

Pro- and mesothorax fiery-red or golden .... *nobile*, ♀.

12. Whole insect dark blue or green; apex of abdomen distinctly but very obtusely tridentate .... *cyanea.*

At least one abdominal segment wholly, and another partly, red or golden above; apex not tridentate—13.

13. Thorax with, at least, some definite dorsal space entirely golden or fiery-red—14.

Thorax with, at most, golden touches here and there, general effect dark blue or green—16.

14. Scutellum and prothorax fiery-red; apical segment of abdomen blue, or blue and green—15.

Scutellum blue; prothorax only touched with gold at apex; last segment of abdomen red, with a black or greenish apical margin; apex distinctly but obtusely quadridentate .... *succincta.*

15. Large, finely and evenly punctured; prothorax and second abdominal segment long; pubescence very short; apex of abdomen very indistinctly angled at sides, almost rounded.. *viridula*, var. *ornata.*

Smaller, much more coarsely and irregularly punctured; prothorax and second abdominal segment shorter; pubescence long and conspicuous; apex of abdomen distinctly but obtusely quadridentate ... . *viridula.*

16. Basal segment of abdomen deep blue in both sexes, a large patch of the same colour extending over the second segment in the ♂, abdomen strongly quadridentate .... *fulgida.*

Whole abdomen (above) fiery-red or golden—17.

17. Apex of abdomen distinctly and often sharply quadridentate—20.

Apex of abdomen rounded, without teeth—18.

18. Pubescence very short and inconspicuous; second abdominal segment with extremely close, fine and uniform punctures; small species......... *neglecta.*

Pubescence long and abundant; second segment less closely and finely punctured, punctures of two distinct sizes intermingled; species larger—19.

19. Punctures of first abdominal segment conspicuously larger and coarser than those of second, general effect of abdomen somewhat opaque and rugulose; a large insect with long, pale pubescence .... *pustulosa.*

Punctures of first and second segments not strikingly dissimilar; abdominal surface rather brighter than in *pustulosa*; insects rather smaller than that species.

Hairs on apical segment, at least in part, black; fossulets nearly obsolete... *hirsuta.*

Hairs on apical segment white; fossulets distinct...................... *osmiæ.*

20. Abdomen (beneath), and legs, with fiery-red reflections; whole insect more densely pubescent; puncturation finer and more even; metathoracic spines more curved and sharper .... *Ruddii.*

Abdomen (beneath) seldom, and legs never, fiery, rather green or blue; pubescence thinner; puncturation very variable, but probably always coarser than in *Ruddii* (often very much so), and becoming remote towards the apex of segment 2 (which is usually very brilliant), always closer again on segment 3; metathoracic spines more stout and triangular .. .. *ignita*.

I ought not to leave the subject without expressing my hearty thanks to the collectors, especially Dr. Mason, who have so kindly trusted me with their valuable specimens, and to M. du Buysson and Mr. Waterhouse for giving me the inestimable advantage of their skill and knowledge in clearing up difficulties of identification.

Woking: *February*, 1896.

SUPPLEMENT TO "A SYNOPSIS OF BRITISH *PSYCHODIDÆ*."

BY THE REV. A. E. EATON, M.A., F.E.S.

(*Continued from page* 76).

SECTION III OF PERICOMA; British species, Nos. 16–25; Algerian, Nos. VII–XIII.

Affinities differing with the Subgenus:—**A**, somewhat akin to Section II, A, *a*; **B**, very nearly related to **A**, has something in common with Section V; **C**, approaches Section II, B; while **D** and **E** are connections of Section IV and *Psychoda*.

Refer, *ante*, 2nd ser., vol. iv, p. 32, step 3*b* and pp. 123–7; vol. v, pls. ii and iii, figs. P. 16–25 (details).

CLASSIFICATION OF SPECIES of the 3rd SECTION OF PERICOMA.

* Antennæ 16-jointed in the ♀ only; in the ♂ 15-jointed, and provided with a looped appendage to the 3rd joint. Cubitus destitute of bristling hairs.

A. Bristling hair in parts of the wing extended beyond the shortest line from the end of the subcosta to the end of the anal nervure. First joint in the ♂ antennæ longer than the next two joints combined; 2nd joint stout, ovoid or subglobular; 3rd joint less stout, oval, stouter and longer than the 4th joint (the above-mentioned appendage of agglutinated hairs is peculiar to this sex); the articular appendages of the flagellum short, curved at their origin and then almost straight and slightly divergent. Wing pointed at, or in close proximity to, the end of the cubitus; bristling hair extended farthest upon the posterior radius.

A. Ending of the bristling hair on the anterior radius opposite the end of the subcosta; the endings of this hair on other nervures,

from the posterior radius to the postical, arranged in an angulate or zigzag line with one another; subcosta, cubitus, præbrachial and anal nervures without bristling hair...
Species No. 16, Brit.

A.A. Ending of the bristling hair on the anterior radius near the wing-margin some distance beyond the end of the subcosta; its endings on other nervures, from the posterior radius to the postical, arranged in a curved line with one another; subcosta, cubitus, præbrachial, posterior pobrachial and anal nervules without bristling hair ... Species Nos. VII, Alg.; 17, Brit.

** Antennæ 16-jointed in both sexes. Cubitus provided with some bristling hair.

† Bristling hair in parts of the wing extended beyond the shortest line from the end of the subcosta to the end of the anal nervure.

B. First joint in the ♂ antennæ longer than the next two joints together; 2nd joint very stout, pyriform, with a tuft of long spiniform scales projecting on one side beyond its apex; 3rd joint much smaller, partially hidden by the shorter scales of the 2nd joint, ovoid with a short beak, resembling and subequal to the 4th joint, but with a less widely spread verticil of hairs; articular appendages of the flagellum setiform, flattened and almost drepanoid or subspirally curved half a turn. Wing pointed exactly at the end of the præbrachial nervure; bristling hair extended farthest upon the posterior radius; its endings on this and other succeeding nervures to the postical arranged almost transversely in a gently curved salient line with one another; subcosta, præbrachial and anal nervures without bristling hair. Pupal spiracular nipples persistent in the shape of a pair of claviform appendages to the thorax of the ♂ fly, inserted anteriorly one on each side on a level with the insertion of the antennæ...
Species Nos. VIII, Alg.; 18, Brit.

C. First joint in the ♂ antennæ subequal to or barely longer than the next two together; 2nd joint globular.

c. Bristling hair extended subequally and farthest upon the posterior radius, cubitus and anterior pobrachial; its ending on the anterior radius subopposite the end of the subcosta; subcosta, præbrachial and anal nervures without bristling hair; apex of the wing ellipsoidal or subacute between the cubitus and the præbrachial nervures. Third joint in the ♂ antennæ similar and subequal to the 4th joint, bulbose, with the beak subequal in length to the bulb.

c. Endings of the bristling hair on nervures posterior to the præbrachial arranged in a very oblique curved line with one another. Third joint in the ♂ antennæ furnished with a moderately ample campanulate verticil of hairs;

the beaks longest in the 6th to the 12th joints; articular appendages hair-like, connivent towards the tips of the joints, and each subspirally curved to the extent of about half a turn ....Species Nos. 23 and 25, Brit.

c.c. Endings of the bristling hair on nervures posterior to the præbrachial arranged in an angulate or zigzag line with one another. Third joint in the ♂ antennæ furnished with a cupuliform verticil of hairs equal in amplitude to that of the 4th joint; joints 3rd to 5th in this sex and species provided in addition with some long wide-spreading spine-like scales on the inner side of the bulbs inserted among the hairs; the beaks of the joints of nearly uniform length throughout the flagellum; articular appendages indistinct, connivent apparently at about the middle of the beak ....Species No. 22, Brit.

C.C. Bristling hair extended farthest upon the cubitus, and usually subequally far upon the anterior pobrachial; its ending on the anterior radius subopposite the end of the subcosta; subcosta, præbrachial and anal nervures without bristling hair; its endings on the radial branches and cubitus in an oblique slightly curved line with one another; those on the posterior nervures in a zigzag line; apex of the wing ellipsoidal or subacute between the cubitus and the præbrachial nervure. Third joint in the ♂ antennæ subequal in length to the 4th, bulbose with a stout tapering beak subequal in length to the bulb; each of these joints furnished with an ample cupuliform verticil of hairs; the beaks elongate in joints 5—15, and the apiculus of the 16th slender; articular appendages long, hair-like, curved subspirally to the extent of half or three-quarters of a turn...............Species Nos. 19 and 21, Brit.

D. First joint in the ♂ antennæ shorter than the next two together; 2nd joint subglobular.

D. First joint in the ♂ antennæ longer than the 2nd joint.

d. Bristling hair extended farthest upon the cubitus; its ending on the anterior radius very near the bifurcation of the radius, and considerably interior to the end of the subcosta; subcosta, præbrachial and anal nervures without bristling hair; its endings on the radial branches and cubitus in a bold curved line with one another, and those on posterior nervures in a zigzag; apex of wing ellipsoidally rounded between the cubitus and the præbrachial nervure. Third joint in the ♂ antennæ similar and subequal in length to the 4th, ovoid or bulbose, with the beak short, tapering and stout, and with the verticil of fine hairs cyathiform and ample; the beaks of the joints nowhere longer than the bulbs, and the last two nodules subcontiguous; articular appendages apparently represented by numerous fasciculate soft capillary scales lining the verticils of longer hairs ......Species No. 20, Brit.

d.d. Bristling hair extended subequally and farthest upon the posterior radius, cubitus and anterior pobrachial considerably beyond the end of the subcosta; subcosta, anterior radius, præbrachial and anal nervures without bristling hair; its endings on the posterior radius, cubitus and anterior pobrachial in a transverse straight line with one another, and those on posterior nervures in a zigzag having the re-entering angle on the posterior pobrachial very near the bifurcation. Wing pointed at the end of the præbrachial nervure. Third joint in the ♂ antenna similar and subequal in length to the 4th (the latter has rather a longer beak), bulbose with a tapering beak subequal in length to the bulb, and with an ample cupuliform verticil of hairs; the beaks longest from about the 4th to the 7th joints; the last two nodules distant; articular appendages of the flagellum setiform, long, subspirally curved for three-quarters or one turn from their origin, and overlapping at the tips which are returned in a manner that when out of focus produces the appearance of the two forming together a tænoid loop around the beak ...Species No. IX, Alg.

D.D. First joint in the ♂ antennæ shorter than the 2nd joint. Bristling hair extended subequally and farthest upon the cubitus and the anterior pobrachial. Wing pointed at the end of the præbrachial nervure, or quite close thereto.

$d^2.$ Bristling hair wanting on the subcosta, præbrachial and anal nervures; its endings on the other nervures situated very nearly as in Brit. spp. Nos. 19 and 21 (step c.c. above), but with that on the anterior radius interior to (not opposite) the end of the subcosta. Third joint in the ♂ antennæ subequal to the 4th, and bulbose with a dense cupuliform verticil of hairs; the succeeding joints as far as the 15th similar; the verticil of the 16th ovoid and closed; the beaks long from about the 4th to the 11th joint; articular appendages of the flagellum setiform, long, curved subspirally more than one turn, their extremities overlapping and returned...

Species No. 24, Brit.

$d^2.d^2.$ Bristling hair wanting on the subcosta, præbrachial, posterior pobrachial and anal nervures; its endings on other nervures from the anterior radius to the postical exterior to the shortest line from the end of the subcosta to the end of the anal, all of them being approximated rather nearly to the wing-margin, so as to be, as it were, in the circumference of a slightly truncate, elongate, semi-ellipse. Third joint in the ♂ antennæ longer than the 4th, and bulbose with the base of the bulb in the dried specimen somewhat obconical, and with a deep, ample, campanulate verticil of hairs; the succeeding joints to about the 11th also bulbose, with long beaks and campanulate verticils; and then the beaks lessen in length, and the verticils grow wider and shallower; articular appendages flatly setiform, long and curved cycloidally or subspirally, with the ends returned, as described above under step d^2 ....Species No. X, Alg.

†† **E.** Bristling hair on the wing wholly interior to the shortest line from the end of the subcosta to the end of the anal nervure. First joint in the ♂ antennæ shorter than the next two together; 2nd joint subglobular.

E. First joint in the ♂ antennæ shorter than the 2nd joint. Bristling hair extended shortly beyond the pobrachial bifurcation, and very shortly beyond the radial; its endings on the radial branches and cubitus in a curve with one another; subcosta, præbrachial and anal nervures without bristling hairs; apex of the wing subacutely pointed between the cubitus and the præbrachial, quite close to the latter nervure.

e. Endings of the bristling hair on the pobrachial branches and postical nervure arranged in a re-entering angulated line with one another far beyond its ending on the axillar; this last ending, in the ♀, distant from the wing-margin..........................Species No. XI, Alg.

e.e. Endings of the bristling hair on the pobrachial branches and postical nervure, in the ♂, placed in a direct transverse line with the ending on the axillar; this last ending close to the wing-margin ....Species No. XII, Alg.

E.E. Male unknown. Bristling hair on the pobrachial nervure confined to the stem and not extended to the branches; its endings on the radial branches, in the ♀, subopposite each other, well beyond the bifurcation, but distinctly interior to the ending on the cubitus; its endings on the pobrachial and postical placed in a direct transverse line with its ending on the axillar; this last ending placed rather near the wing-margin; apex of the wing acute, exactly at the end of the præbrachial nervure..................................Species No. XIII, Alg.

(To be continued).

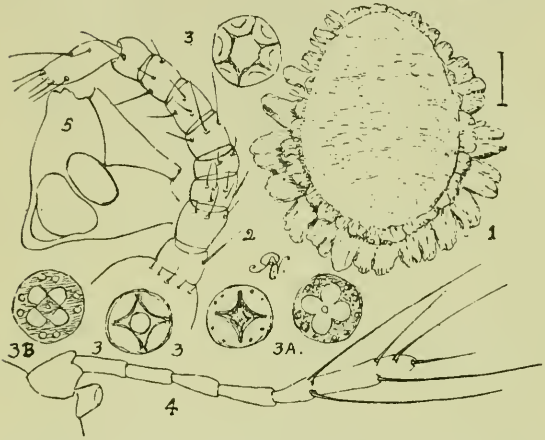
OBSERVATIONS ON *COCCIDÆ* (No. 15).

BY R. NEWSTEAD, F.E.S.,

CURATOR OF THE GROSVENOR MUSEUM, CHESTER.

Icerya Ewarti, *n. sp.*

♀. Adult (fig. 1) after gestation, piceous, widely ovate, sometimes nearly circular, very convex behind, narrowed and somewhat flat in front; margin with a double row of short, stout, waxen, appendages, of which the outer are much the largest, and more widely separated; dorsum completely covered with the same material, but without design or distinct articulations in any of the specimens to hand; body shrivelled beneath, forming a cavity in which the eggs are laid, and, subsequently, the larvæ are hatched. Antennæ (fig. 2) shorter than the legs, of ten joints: 1st much the widest, 2nd, 4th, 5th, 6th, 7th, 8th, and 9th shortest; 10th as long as 2nd and 3rd together, and somewhat claviform; there are a few hairs on all the joints. Mentum very short, monomerous; unexpanded filaments about half the length of the leg. Legs short, ordinary, with many short scattered hairs, most numerous on the inner margin of the tibiæ; claws rather blunt and apparently retractile. Dermis above almost covered with large raised spinnerets, which present, as they are focussed under the microscope, the various patterns shown in the figures (3, 3A, 3B); usually these have four clear, central, circular spaces, forming a quatrefoil (figs. 3A, 3B), but in a few instances there are one, three, or five; there are also a number of scattered hairs; dermis beneath with the spinnerets much smaller, but with the hairs more numerous and longer than those above.



♀. Second stage: antennæ of seven joints, tapering from 1 to 6 inclusive; 7th claviform. This description is from an effete skin, of which there were many examples attached to the midrib of the leaves.

Larva of ♀: antennæ (fig. 4) slender, and, exclusive of hairs, nearly as long as the body, of six joints, 2nd, 3rd, 4th and 5th, of equal length and width, 6th as long as the three latter together, has five long hairs, and one short. Eyes very large (fig. 4), prominent, obconical. Anal segment with four exceedingly long hairs, twice the length of the body.

♂. Nothing but the thorax (fig. 5) and part of an antenna was found; the structure of the latter was normal.

♀ easily distinguished by its 10-jointed antennæ; the form and arrangement of the waxen appendages to the body; the curious spinnerets; the absence of a cottony pad at gestation; and by the deposition of the eggs beneath the body, as in the ♀ *Lecania*. The larva is also distinct in having much longer antennæ; and longer anal hairs.

Hab.: Lekie, Lagos, W. Co. Africa, on "Pehpet."

Collected July 24th, 1895, by Col. J. W. Ewart, to whom I have the pleasure of dedicating this interesting species.

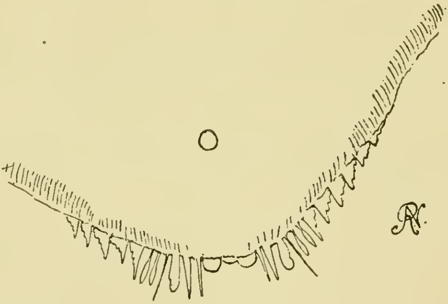
ASPIDIOTUS ARTICULATUS, Morgan.

A number of specimens of this species were on the same plant, and from the same locality as the preceding species.

ASPIDIOTUS MACULATUS, *n. sp.*

Scale of the ♀ pure white, rather thick, exuviæ black, forming a large, conspicuous, central spot.

♀ without grouped spinnerets; pygidium (fig.) with two pairs of lobes, central pair minute, rounded; 2nd pair long, narrow, indented on the outer lateral margin; immediately anterior to these is a long slender spine; between the lobes are two spine-like plates, beyond the 2nd pair of lobes two spear-shaped plates, and beyond these six or seven broad serrated plates, each successively shorter than the other; margin beyond the fringe distinctly striate.



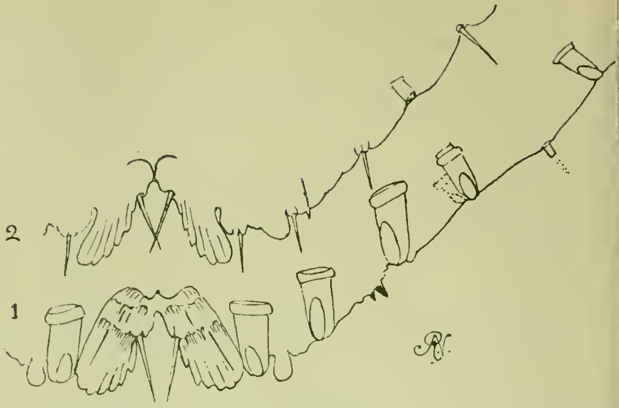
The species seems quite distinct; but there is a doubt as to whether the specimens are adult. In view of this I shall defer a more elaborate description for future publication, as I am desirous of obtaining more material.

In addition to those described above, Col. Ewart has sent other species of *Coccidæ*, which, unfortunately, are too imperfect for verification.

PARLATORIA DISTINCTISSIMA, *n. sp.*

Scale of the ♀ normal, widely ovate, or sometimes more or less circular; larval moult pale yellow, placed at the extreme margin of the scale; second moult, forming nearly the entire scale, naked, shining black, ovate, narrowed behind, where is a distinct cleft visible beneath; the rather broad, thin, white scale secreted by the adult ♀ forms a complete margin round the second moult.

♀, second stage, opaque black; pygidium (fig. 1) apparently without grouped spinnerets, but is too opaque for me to be certain of this; there are two pairs of lobes, the 1st very large, widely divergent and deeply serrated on the inner margin; the 2nd pair are very minute, and slightly dilated at the extremity; between the 1st and 2nd pairs of lobes is a large pore or gland, with an opening on the margin, and beyond these four or five others, equidistant, and all opening in the same way. There is a single long spine attached near the base of the inner margin of the median lobes; there are also two or three very short spines on the margin beyond; there is no trace of plates.



♀ adult: pygidium (fig. 2) without grouped spinnerets; median lobes as in the second stage ♀, but somewhat narrower, and the 2nd pair of lobes are even more rudimentary; there is a single spine on each of the median lobes, one between the 1st and 2nd pairs of lobes, and beyond them three others; immediately beyond the 1st spine is a large pore, and midway between the 4th and 5th spines is another, somewhat shorter than the 1st. In this stage the spines are longer and more numerous, and there are fewer marginal pores.

Hab.: Baluchistan, on *Nerium oleander*.

Collected by Lieut. R. Tomlin, and forwarded from Calcutta, January 24th, 1894. On the leaves was also a curious black *Aleurodes*, which so closely resembled the Coccids that it was only by the application of the microscope I was able to detect the difference. This must be my excuse for delaying the publication of this description.

In all the previously described species of *Parlatoria* the adult ♀ has grouped spinnerets, and the margin of the pygidium crenulated; and so closely do the species resemble each other in this respect that it is somewhat difficult to separate them. In the above it will be seen such characters are entirely wanting; yet at the same time the external characters of the scale agree in every detail with those of *Parlatoria*; for this reason I do not feel justified in creating a new genus for this otherwise unique species.

Chester: *March 13th*, 1896.

SOME QUERIES CONCERNING BRITISH *MICRO-LEPIDOPTERA*, LEFT UNANSWERED BY THE LATE MONS. RAGONOT.

BY CHAS. G. BARRETT, F.E.S.

The untimely decease of that most careful and painstaking French Entomologist, M. E. L. Ragonot, has deprived us—among far larger matters—of a hoped-for explanation of some rather perplexing statements in a paper by him, communicated to the "Annales" of the Entomological Society of France, 1894, pp. 161—226. Among a vast amount of information of great value on very many species, the following, more doubtful, statements occur:—

"ABLABIA OSSEANA, Sc. (*pratana*), p. 184.—I possess several examples called *stelviana* by Millière. He figured a brown larva as that of *osseana*; but this insect has been reared by M. Joannis, in England, from a yellowish-green larva—often pale yellow—with a pale dorsal line and a more obscure subdorsal stripe on each side. The body beneath is of the colour of the dorsal line. The head is of a reddish-yellow, and on each side of the following segment is a reddish spot. The larva is thickest in the middle, and attenuated at each end, the head narrower than the body.

"It lives about the middle of June in the flowers of *Chrysanthemum leucanthemum*, of which it draws together the petals, feeding on the florets of the receptacle. The moth appears at the beginning of July."

"CHEIMATOPHILA TORTRICELLA, Hüb. (*hyemella*, Tr.), p. 185.—M. l'Abbé L. de Joannis has communicated to me a description of the larva, which he has discovered. This larva has six feet; it is brown, paler beneath, marked with three very slender dorsal lines; head fulvous. It lives in May and June on oak underneath a silken covering, which envelopes, gradually, the extremity of a branch, sometimes enclosing many leaves, which the larva draws together, forming a gallery through them; living in it in small colonies. The cocoon is of a thin texture, and is placed in the interior of the habitation; the larva remains in it long unchanged, and reaches the imago state in the beginning of March."

"GRAPHOLITHA ZEBEANA, Rtz.—M. l'Abbé L. de Joannis has submitted to me a specimen taken at Canterbury on the 7th June."

With regard to these three statements I wrote to my old correspondent, M. Ragonot. Unfortunately, from the incessant pressure of other matters, I delayed doing so for many months, but I did write at last, and was patiently awaiting a reply when the lamentable news of his death arrived. Now it gives me real pain to bring up these instances of apparent mistakes for investigation, which yet—in view of the known vitality of error—seems necessary.

Ablabia pratana (*osseana*) is one of our most abundant moths. On chalk hills, on rough pastures, in marshy meadows, on hill-sides, wherever is extensive waste ground, from our south coasts to the Shetlands, it may reasonably be looked for; in most of them it will be found, and in many of them in great abundance. We know next to nothing of its larva, and any reliable information is most welcome. But is this reliable? We have many of us reared the larvæ which are greenish or yellowish, thickest in the middle, and draw together the petals (ray-florets) of *Chrysanthemum leucanthemum*, feeding on the disc-florets inside, and they usually prove to be *Sciaphilæ*, say *Sciaphila conspersana* or *pascuana*, or *Sphaleroptera ictericana*, never *Ablabia pratana*; and as the larvæ have been collected in spots in which the latter species (of course) is plentiful, the improbability of the statement quoted seems to be increased. Perhaps all may be explained by the fact that the smooth unicolorous brown male of *S. ictericana* bears so close a resemblance to *A. pratana* that it would be quite pardonable to mistake one for the other.

In the case of *Cheimatophila tortricella* (*Tortricodes hyemana*) no such probable explanation suggests itself. The time given for emergence is correct, but the description of the habits of the larva seems rather to refer to *Acrobasis consociella*. There is a full description of the larva of *Tortricodes hyemana* by Mr. Nelson Richardson in vol. xxi of this Magazine (pp. 252—3). He says that it is of a dull brick-red, inclining to brown, with paler lines; and that it turns down the tip of an oak leaf, thereby forming a somewhat conical habitation, which it changes as frequently as it eats the leaf, always making itself a similar dwelling. Also that when full-fed it goes down to the ground, where it makes a tough cocoon of earth and silk. Moreover, he distinctly states that the larva is not at all gregarious.

Mr. Richardson is well known to be most carefully accurate in his observations, and I fully accept his statement as correct. Indeed, a habitation formed at the tip of an oak branch, and enclosing several leaves, would be so conspicuous that, if existent, it would, in the case of so common an insect as *T. hyemana*, be familiar to all of us.

With regard to *Grapholitha Zebeana*, it can only be remarked that we have no *other* record of its occurrence in this country. It seems to be extremely local on the continent, since Staudinger only records it from Silesia and Styria; it is somewhat allied to one of our most recent novelties, *G. gemmiferana*, but larger and darker, and, one would think, too conspicuous to be long overlooked. M. Ragonot stated that a specimen had been submitted to him, and as he examined it there would seem to be no excuse for doubt, were it not that in a previous portion of the same paper (p. 197) he made a similar statement with regard to *Conchylis Kindermanniana*, pointing out that it was new to England; but in the errata at p. 226 he admitted that on examining a series of specimens he found it to be only *C. Smeathmanniana*. In view of this last circumstance I think we must wait for further evidence before admitting *Grapholitha Zebeana* to a place in the British list.

39, Linden Grove, Nunhead:
April, 1896.

ON THE STRUCTURE AND DEVELOPMENT OF THE LEPIDOPTEROUS WING.

BY D. SHARP, M.A., F.R.S., &c.*

It has long been known that rudiments of the wings of the butterfly can be found in the interior of the body of the caterpillar, and Verson has recently stated that he has found them in the embryo caterpillar some days before the young silkworm leaves the egg; when it appears that these rudiments consist of a few cells in close propinquity with a tracheal branch; the position is on the interior of the wall of the body on the second and third thoracic segments. By the growth of the cells a projection into the interior of the body is formed, the structure being essentially of the nature of an invagination or inward growth of the layer of cells forming the inner part of the wall of the body, and usually called the hypodermis. The growing structure retains a remarkable relation with the tracheal system, and as the cells increase, the tracheæ multiply and assume a complex form, so that branches of minute, rolled up, tracheæ are found in the wing-rudiments. In the course of the growth it appears there are, according to Gonin's account, two separate consecutive tracheal systems.

While the caterpillar is in search of a place in which to change to a chrysalis, the wings disappear from the interior of the body, and if the outer layer of the cuticle be stripped off they will be found immediately under it, so that when the skin is cast off the wings are visible on the exterior of the body.

The mode in which the wings change their position has not been satisfactorily made out, but Gonin considers it is chiefly due to a rapid destruction of the hypodermis external to the wing, and its reconstitution internally thereto.

When the wing becomes an external organ a rapid increase of size, especially of length, occurs. The wing is not at this time, as it is subsequently, a sheet-like structure, but is rather a bag filled with the nutritive fluid of the body and other living matters. At the moment the caterpillar's skin is cast and the chrysalis revealed the bundles of minute tracheæ are torn out. In the chrysalis large tracheæ are found in the imperfect wings, but these subsequently disappear, and it would seem that no tracheal system can be found in the completed wing. The changes that go on in the wings when the butterfly emerges are very great, and the limp sacs become converted into the rigid sheet-like structures covered with scales. The scales are, however, formed long anterior to the emergence of the butterfly, before, in fact, the wing-skin on which they are subsequently implanted exists. The origin and development of the wing-nervures is obscure and a subject of great difficulty. It has been remarked that tracheæ exist in the wings of the chrysalis, where they have much the same arrangement that the wing-nervures have in the perfect insect. Hence it appears to be commonly supposed that the tracheæ are changed into the nervures; this, however, appears not to be the case. It seems probable that the real origin of the structures that Lepidopterists now consider of so great importance in the classification of the objects of their study, is from string-like structures which run near the tracheæ, called Semper's rods. The tracheæ ultimately disappear; their propinquity with Semper's rods seem to indicate that they take some share in the formation of the nervures; ultimately the remains of Semper's rods may be found in the interior of the nervures.

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*Abstract of a communication made to the Cambridge Entomological and Natural History Society.

When the wing is completed the sides of the bag from which it was formed become adherent by dried matter with a somewhat pillar-like arrangement, this is apparently refuse material from which has been extracted and withdrawn into the interior of the insect's body all the material that may be of further use to the winged insect.

Cambridge: *May*, 1896.

Gastropacha ilicifolia on Cannock Chase.—On May 17th, when collecting on Cannock Chase with Mr. Basil Burnett, I had the good fortune to find a fine male *Gastropacha ilicifolia*. This is almost a re-discovery, as the insect has not been taken here for 14 or 15 years. It was found some distance from its old haunts, but its exact *locale* will remain a secret for the present in the interests of the insect as well as myself. I hope with the clue so obtained to get some larvæ this year.—Richard Freer, Rugeley: *May* 18*th*, 1896.

Note on Leucania pallens, ab. ectypa, Hb.—On p. 99 (*ante*) Mr. Barrett describes a form of *Leucania pallens*, which has red fore-wings, but without the usual white, fine, longitudinal lines, and states that "this variety of *Leucania* *pallens* seems to agree with what Hübner called *L. ectypa*." Mr. Barrett can hardly have compared the specimen he describes with Hübner's figure, which is particularly characterised by the presence of these white lines. "Hübner's fig. 231 has the anterior wings of a bright reddish-ochreous with pale nervures, no central dot, two dots in outer row, one just below the third branch of the median nervure. Hind-wings whitish-grey, with a dark grey shade parallel to the hind margin. Dr. Staudinger describes it as 'Alæ anteriores rufæ.' I have many specimens in my long series almost like Hübner's figure. The development of the grey shade on the hind margin into a transverse band is rarely very distinct in British examples. This is treated by Guenée as a distinct species in his *Noctuélites*, v, p. 94. I have specimens from Howth, Deal, Aberdeen, Rotherham, Strood, and Forres" (*British Noctuæ and their Varieties*, vol. i, p. 41).

I have also a suspicion, after carefully studying Mr. Barrett's description of the supposed new *Leucania* from the Suffolk (or Essex ?) coast, that it is identical with that I have already described as an aberration of *L. impura*, under the name of *punctilinea* (*Ibid*, p. 40).—J. W. Tutt, Westcombe Hill, S.E.: *May 2nd*, 1896.

[Possibly I may not be quite accurate with regard to the *ectypa* of Hübner. I am not so fortunate as to possess his great work; and have not had time just recently to consult a copy. With regard to the novelty—*L. favicolor*—I should be sorry indeed to pay Mr. Tutt so poor a compliment as to suggest that he had mistaken it for a variety of *L. impura*.—C. G. B.]

Flies riding on beetle-back.— Across the mouth of the Seybouse, on sandy pasture land bordering the seashore, big coprophagous beetles are common, sheltering in large holes in the soil when at rest, and running about on business. A small species of *Borborinæ* may often be seen riding on their backs, chiefly on the pronotum and about the bases of the elytra—sometimes half-a-dozen females on one beetle. The beetles occasionally throw themselves over on their backs to try and get rid of them by rolling; but the flies elude all their efforts to dislodge them, dodging out of harm's way into the joinings of the thorax and out again, and darting from back to breast and back again, in a way that drives the beetle nearly mad. In vain she scrapes over them with her legs; in vain does she roll over or delve down amongst the roots of the herbage; the flies are as active as monkeys, and there is no shaking them off. It is difficult to get them off into the killing bottle; nothing persuades them to fly; and they would very much rather stick to the beetle than be driven off it down into the tube.—A. E. Eaton, Bône, Algeria: *May 9th*, 1896.

Stylops melittæ at Leatherhead.—On April 18th I caught in our garden a fine specimen of *S. melittæ*. It had a very curious flight, somewhat resembling that of a burnet moth, and was very lively in the pillbox.—C. A. Briggs, 55, Lincoln's Inn Fields: *May 18th*, 1896.

The "Power Collection." — Entomologists will be pleased to hear that the "Power Collection" has been acquired by the Trustees of the British Museum, and that it will soon be available for study. It contains at least 30,000 specimens of *Coleoptera* and 5000 *Hemiptera*. As regards the *Coleoptera*, it is perhaps the most extensive collection that has ever been made of our British species. It is especially rich in *Staphylinidæ*, and contains several uniques, the most important of which is *Borboropora Kraatzi*. The specimens are nearly all carefully numbered and registered, the register (giving the precise locality) extending over the years 1848—1879. Dr. Power, as is well known, exclusively devoted his attention to British insects, and a very large number of his specimens were captured by himself. Many of the rarer species, his liberality notwithstanding, are still represented by long series. It is a matter for congratulation that the collection has become national property.—Eds.

The habits of Pogonus.—In the course of a stroll along the foreshore of the Isle of Sheppey yesterday evening, I happened to pass the spot where I met with *Pogonus luridipennis* last September (*cf.* Ent. Mo. Mag., ser. 2, vol. vi, p. 282), and went down on the salt-marsh to see if any of the genus were stirring. The evening being very fine and warm, my eyes were soon gladdened by the sight, first of *Pogonus littoralis*, and immediately afterwards of *P. luridipennis* coursing rapidly over the bare mud; and a few yards further on both species were found in numbers, evidently "at home." Hitherto I have always found *Pogoni* under small stones, seaweed, and rejectamenta on the shore, or else running about in the sunshine in a somewhat aimless way. Here, in the few places where a little moisture remained after the present prolonged drought, they were to be found, each beetle sitting with its head just at the level of the soil, in a vertical burrow about half-an-inch deep; the earth being thrown out round the mouth of the burrow in a granular form as by a sandhopper or a *Bledius*, only in a much more regular fashion. As one tramped over the soft but tolerably firm soil, the *Pogoni* came hastily out of their holes, and ran off at their best pace in all directions, occasionally vanishing for an instant down the numerous sun cracks, and at once re-appearing on the surface. In less than an hour, before sunset put a stop to collecting, I had bottled fine series of both the rarer *Pogoni*, the usually abundant *P. chalceus*, oddly enough, being quite rare on this occasion. The little strip of salt-marsh, which is overflowed only by the highest tides, is now reduced by the encroachment of the shingle to barely two acres in extent; and as it is used as a place of deposit for ashes and other rubbish from Sheerness, I fear that the time is not far distant when *Pogonus luridipennis* and other *Carabidæ* will be things of the past, as far as this locality is concerned. I may add that I have some *P. luridipennis* to spare for friends.—James J. Walker, 23, Ranelagh Road, Sheerness: *May* 15*th*, 1896.

Quedius riparius, Kellner, in Inverness-shire.—I have a specimen of this insect taken by myself in September, 1893, I believe, in flood refuse from the River Beauly, Inverness, N.B., in the neighbourhood of Beauly Castle. I have no actual recollection of capturing the beetle, but remember noticing it as something quite new to me while I was setting it. Unfortunately I had no opportunity of going through my Beauly captures till last Christmas, when the peculiarly long elytra and the pubescence of the insect at once pointed it out as something not previously recorded from Britain, and with the kind assistance of Mr. C. O. Waterhouse it was speedily identified as *Quedius riparius*, a specimen of which exists in the collection of European *Coleoptera* in the Natural History Museum. I have delayed recording the insect owing to the fact that while at Beauly I received a few Norwegian insects, and under the circumstances thought it undesirable to introduce the insect as British on a single specimen which had escaped notice at the time of its actual capture. Now that it has been introduced I have no hesitation in recording it.

The insect is described by Kraatz in Erichson's "Naturgeschichte der Insecten Deutschlands," and the localities there given are Thuringia, on the banks of brooks under stones, also in Silesia. It is placed between *Quedius boops*, Grav., and *Q. scintillans*, Grav., along with *Q. alpestris*, Heer, which is not recorded from the British Isles.—A. J. Chitty, 27, Hereford Square, S.W.: *May 2nd*, 1896.

Strachia festiva, Linn.—This bug appeared last autumn to be fairly plentiful in and about the woods around Doddington, Kent. The locality is close to Stockbury, where it has been taken by Mr. Champion. It was invariably settled on umbelliferous plants, where it was very conspicuous, but fell to the ground on any attempt being made to capture it.—Id.

Obituary.

Auguste Sallé, F.E.S.—We much regret to announce the death of this well-known French entomologist at his residence in Paris, on May 5th, in his 76th year. In early life M. Sallé travelled much in the Southern States, the West Indies, Central America, and Venezuela, making large collections in all branches of Natural History, especially entomology. After his return he established himself in Paris as a Natural History Agent, his house became a rendezvous for provincial and foreign naturalists, and he several times took temporary charge of important collections; the rich collection of Baron de Chaudoir was in his house during the siege of Paris in 1871, and with the house, narrowly escaped destruction by an obus. His Central American collections were purchased by Messrs. Godman and Salvin, and formed part of the materials for the "Biologia Centrali Americana." He published but little, and mostly in the Annales Soc. Ent. de France, of which Society he became a Member in 1852, and in the affairs of which he took a warm interest; he joined the Entomological Society of London in 1875. Sallé possessed a striking personality, and was markedly genial and courteous in manner. His French colleagues will no doubt furnish, in due time, a more detailed memoir of him than we can possibly give here.

Societies.

Birmingham Entomological Society: *March 16th*, 1896.—Mr. G. H. Kenrick in the Chair.

Mr. A. H. Martineau showed a willow gall with the pupa case of a Cecidomyid projecting from it; he described the manner of exit of the pupa before emergence of the fly. Mr. P. W. Abbott, a very fine series of *Spilosoma lubricipeda*, the majority of which, showing a nice range from the type to var. *radiata*, had been bred by Mr. Mera, but including var. *semifasciata*, which had been bred by Mr. Porritt; he also showed *S. menthastri*, var. *ochracea*, from Forres. Mr. R. C. Bradley, a series of a curious little fly, *Pelomyza Baumhaueri*, Loew, which he had found in some numbers last year in one spot in Sutton Park. Mr. Valentine Smith, a number of *Coleoptera*, including amongst others the following:—*Amara patricia* from near Stourbridge, *Donacia affinis* from Kingswood, *Silpha quadripunctata* from Sutton, *Rhopalomesites Tardii* from Lynmouth, *Calathus piceus* and *Ocypus pedator* from Ilfracombe, and *Staphylinus erythropterus* and *Trox sabulosus* from Cannock Chase. Mr. W. Harrison, living pupæ of *Euchloë cardamines* from his garden at Harborne. Mr. H. Foster Newey, a number of drawings in black and white of the larvæ and pupæ of British *Lepidoptera* executed by himself and Mr. Rollason; they were very greatly admired for the excellence of the detail and their accuracy.

April 20th, 1896.—Mr. P. W. Abbott, Vice-President, in the Chair.

Mr. H. Foster Newey, of Hampton-in-Arden, was elected a Member of the Society.

Mr. R. C. Bradley said that he had heard that a specimen of *Vanessa Antiopa* was taken in Sutton Park some years ago by Mr. Titley. Mr. G. T. Bethune-Baker said his father saw one at Moseley about ten or twelve years ago; and Mr. Wainwright said one was seen in Wyre Forest by the Rev. R. R. Rodgers about the same time. Mr. P. W. Abbott showed a living larva of *Agrotis Ashworthii* taken at Llangollen the previous day. Mr. W. Harrison, *Tæniocampa gracilis* from Arley, and a pupa of *Acherontia Atropos* from Chalcot. Mr. G. W. Wynn, *Orthosia suspecta* from Northfield, &c. Mrs. Petley, pupæ of *Brephos Parthenias*, and the pupa cases, &c., showing manner of pupation; they had bored deeply into bark and cork supplied to them, and pupated inside. Mr. J. T. Fountain, larvæ of *Arctia villica* from Dawlish, &c. Mr. A. H. Martineau, a piece of wood from the stump of an old tulip tree at Middleton Hall; it was much perforated by a large colony of *Crabro interruptus*, usually a rare insect; with it were shown specimens of the perfect insect, ♂ and ♀, and cells and parasites. Mr. C. A. E. Rodgers, a variable series of *Tæniocampa munda* from Malvern; one specimen had a broad median band and very little trace of any of the usual markings; also he showed varieties of *T. instabilis*, one closely approaching *stabilis* in colour and markings, the other resembling *populeti*, especially in the mouse-colour of the thorax. Mr. R. C. Bradley, some very beautiful photographs of the wings of insects, chiefly *Tipulidæ*, made by Mr. G. C. Bignell; they were very much admired for their clear definition and exactness. Mr. Wainwright, *Xylocampa lithorhiza* from Knowle, &c. Mr. H. Foster Newey, another set of drawings of larvæ and pupæ, in black and white, intended to illustrate a work on these stages of British *Lepidoptera*, to supplement Newman's book; they were drawn to a uniform scale of four diameters, and were wonderfully distinct.—Colbran J. Wainwright, *Hon. Secretary*.

Cambridge Entomological and Natural History Society.—Meeting held on Friday, May 1st, 1896, at the rooms of the Hon. Librarian, 57, Trumpington Street, the President, Dr. SHARP, F.R.S., in the Chair.

Mr. Brown, F.E.S., exhibited some interesting specimens from Australia, including a mimetic insect, *Tenodora aridifolia*, and some of the remarkable structures formed by the basket worms, or caterpillars of the *Psychidæ*, some of which were formed from portions of leaves woven into a sort of cocoon, while another was a structure of considerable strength, formed by fastening together pieces of twigs cut by the insect to suitable lengths; also some cocoons of *Cimbex* upon twigs of the whitethorn found near Cambridge, where the insect is common. Mr. Turner (Pembroke), some larvæ of *Bombyx trifolii*. Mr. Paton (Queen's), a specimen, believed to be a hermaphrodite of *Spilosoma lubricipeda*. Dr. Sharp, some pupæ of *Hepialus*. The President read a paper upon the "Structure and Development of the Lepidopterous wing" (*vide ante* p. 137).—C. J. WILKINSON, *Hon. Secretary*.

ENTOMOLOGICAL SOCIETY OF LONDON: *May 6th*, 1896.—Prof. RAPHAEL MELDOLA, F.R.S., President, in the Chair.

Mr. Percy Evans Freke, of Step House, Borris, County Carlow, Ireland, was elected a Fellow of the Society.

Mr. Champion exhibited specimens of *Amara famelica*, Zimm., from Woking, Surrey, a recent addition to the British list; he also exhibited, on behalf of Mr. Dolby-Tyler, a series of *Eburia quadrinotata*, Latr., from Guayaquil, Ecuador, showing variation in the number of the raised ivory-white lines on the elytra, there being sometimes an additional mark exterior to the short basal line and sometimes an additional one on the inner side of the second line. Mr. Gahan said he did not notice anything remarkable in the specimens, except in the arrangement of the spots. Mr. Horace Donisthorpe exhibited a specimen of *Pterostichus gracilis* with three tarsi on one leg, taken near Weymouth last month. Mr. G. T. Porritt, a series of *Arctia menthastri* which he had just bred from Morayshire ova, the ground-colour of the specimens varied from the usual white, through shades of yellow, to dark smoky-brown. Mr. Merrifield, specimens of *Gonepteryx rhamni* bred from larvæ found in North Italy and Germany, the pupæ of which had been subjected to various temperatures; he said that high temperature appeared to cause an increase of yellow scales in the female, and low temperatures generally reduced the size of the orange discal spot on the fore-wings of both sexes; he also exhibited some bred specimens of species of *Vanessa*, the result of experiments tried with a view to ascertain the extreme of high temperature that the pupæ would bear, and its results. The species shown included *Vanessa Atalanta*, *V. urticæ*, and *V. Antiopa*. Mr. Merrifield said that the effects on the imago produced by temperature were being made the subject of systematic research by Professor Weismann, Dr. Standfuss, Mr. E. Fischer, and others. Mr. Elwes asked if these experiments had been made on pupæ only or on the larvæ as well. Mr. Merrifield said that the results were only noticeable when the experiments were made on pupæ; the effect of them on larvæ was not apparent. Mr. Kirkaldy exhibited and made remarks on ova of *Notonecta glauca* var. *furcata*. Mr. Tutt, living larvæ of *Apamea ophiogramma*, together with the grass on which it was feeding; he said the species was formerly considered rare in Britain, but was now found freely in any localities where ribbon grass (*Digraphis arundinacea*) was plentiful. The Secretary read a communication from Mr. E. Meyrick on the subject of Prof. Radcliffe-Grote's criticisms, contained in his paper published in the Proceedings of the Society, 1896, pp. x–xv, on the use of certain generic terms by Mr. Meyrick in writing on the group of *Lepidoptera* known as *Geometridæ*. Mr. Meyrick stated that he rejected the main assumption on which the criticisms were based. Mr. McLachlan opened a "Discussion as to the best means of preventing the extinction of certain British Butterflies." He referred to the extinction of *Chrysophanus dispar*, *Lycæna Acis*, and *Aporia cratægi*, and to the probable extinction, in the near future, of *Papilio Machaon*, and more especially of *Melitæa Cinxia* and *Lycæna Arion*. He stated that one of the objects he had in view in bringing this matter forward was to see whether some plan could not be devised to protect those narrowly localized species which were apparently in danger of being exterminated by over-collecting. Prof. Meldola said he fully sympathized with the remarks of Mr. McLachlan, and he thought that a resolution passed by the Society, possibly in conjunction with kindred Societies, might produce some effect. Mr. Goss stated that *Papilio Machaon*, although apparently doomed to extinction in its chief locality in Cambridgeshire (Wicken Fen), would probably linger on in the county in smaller fens, such as Chippenham, where the larvæ had been found feeding on *Angelica sylvestris*. It would certainly survive in the Norfolk Broads, both from the irreclaimable nature of the fens there, and the extensive range of the species in the district, which Mr. Goss said he had explored in 1887 in boats. He stated that *Melitæa Cinxia*, although gradually disappearing from most of its old localities in the south of the Isle of Wight, was still found in the Island further west in localities in which he had seen it in some numbers in May, 1895. He added that *Lycæna Arion* was far from extinct in Gloucestershire, and was distributed over a much wider area in the extreme south-west of England than was generally supposed. Its disappearance from South Devon was due to the burning of the grass, and the consequent destruction of the food-plant. Mr. Elwes stated that in the district in which he lived in Gloucestershire, he had found *L. Arion* in three or four places on his own property some ten or twelve miles distant from its known localities, but the species had disappeared of late years. The fact that *Arion* had disappeared from his own property, where it was not collected, seemed to point to the fact that it was dying out from natural causes, perhaps owing to changes in climate. Colonel Irby said that *L. Arion* had disappeared many years ago not only from Barnwell Wold, Northamptonshire, but from another part of the county on the estate of Lord Lilford, not accessible to the public, and that its disappearance there was no doubt caused by the destruction of the food-plant and other herbage by burning the pasture, and by the grazing of sheep. Mr. Crowley, Mr. Tutt, Mr. Waterhouse, and Mr. Blandford continued the discussion. It was moved by Mr. Tutt, and seconded by Mr. Elwes, that a Committee be appointed by the Council to investigate the matter, and to report thereon. This was carried *nem. con.* Mr. Guy A. K. Marshall communicated a paper, entitled, "Notes on Seasonal Dimorphism in South African *Rhopalocera*." Mr. P. Cameron communicated a paper, entitled, "Descriptions of new species of *Hymenoptera* from the Oriental Region."—H. Goss, *Hon. Secretary*.

OCCURRENCE OF *COLEOPHORA GLITZELLA*, HFMN., IN BRITAIN.

BY EUSTACE R. BANKES, M.A., F.E.S.

As it is high time that the occurrence of *Coleophora Glitzella* in Britain should be chronicled, it may be useful to record the circumstances under which it was met with, and to give some details about the species and its life-history. Larvæ of a *Coleophora* were found on *Vaccinium ditis-idæa* (cowberry) at Rannoch, in Perthshire, by Mr. W. Salvage in the spring of 1884, and again in 1891 and 1893, and from some of these Mr. W. H. B. Fletcher had the pleasure of breeding the imagines in those three years. On comparing them with Mr. Stainton's continental specimens of *C. Glitzella*, two of which had been received from Herr Glitz, Messrs. Stainton and Fletcher identified them as that species, and, were it not needless, I could confirm their identification, having compared them and the larval cases with Dr. O. Hofmann's original description (Stet. Ent. Zeit., 1869, pp. 119—122), as well as with the series of moths and cases in the Frey, Stainton, and Zeller collections. In his exhaustive paper on the insect (*loc. cit.*), for a translation of which I am indebted to the Rev. C. R. Digby, Dr. Hofmann gives very full descriptions and details about its life-history, but as these are too lengthy to quote, and Scotch examples differ somewhat from continental ones, I append descriptions taken from Rannoch specimens kindly lent me by Mr. Fletcher.

IMAGO.

Antennæ white, sharply and rather broadly annulated to the tips with blackish-brown; basal joint much thickened with grey or pale greyish-ochreous scales. *Palpi* internally whitish or pale greyish-ochreous, externally much clouded with grey. *Head*, *thorax* and *tegulæ* concolorous with the fore-wings. *Fore-wings* glossy, unicolorous, varying in colour in different individuals from rather dark grey to pale greyish-ochreous; cilia pale grey to pale greyish-ochreous. Under-side grey to pale grey, with pale grey to pale greyish-ochreous cilia. Exp. al., 12—14 mm. *Hind-wings* glossy, dark grey to very pale grey; cilia pale grey to greyish-ochreous. Under-side grey to pale grey, with pale grey to pale greyish-ochreous cilia. *Abdomen* dark grey to pale grey above, paler beneath; anal tuft pale grey to pale ochreous. *Legs*: anterior pair internally pale grey to pale ochreous, externally dark grey to pale grey with the tarsal joints pale-ringed; posterior pair internally pale greyish-ochreous or pale ochreous, externally pale grey or greyish-ochreous, tarsal joints pale-ringed.

The females average smaller, paler, and brighter, *i. e.*, less grey and more strongly ochreous than the males. Scotch specimens seem, as a rule, to run decidedly darker than those from the continent.

LARVA.

Head black, highly polished, much narrower than prothoracic segment. *Pro-*

thoracic plate blackish-brown, highly polished, divided by a central pale line. *Body* light ochreous-red, but with the intersegmental spaces and some narrow pale lines, etc., whitish-ochreous; on the back of the third segment posteriorly is a small fusiform highly polished blackish-brown plate divided by a central pale line, and the second, third and fourth segments have a blackish polished spot on each side above the legs. *Anal plate* blackish-brown, highly polished. Ventral surface rather similar to dorsal in colour, but paler. *Bristles* pale and inconspicuous. *Legs* black, highly polished. Length of preserved specimens, fully stretched by blowing, 8 mm.; natural length of living examples, probably about 6 mm.

I have drawn up the above description from five well-grown larvæ exquisitely preserved by Mrs. W. H. B. Fletcher; it seems probable, therefore, that Scotch specimens are much redder than German ones, for Hofmann says (*l. c.*) that the full-fed larva is of a "beautiful bright yellow, marked in the same way as the allied species." The rest of Hofmann's description agrees satisfactorily with mine, but he follows the German custom of reckoning the prothoracic segment as the first, whereas I have followed the English method of counting the head itself as the first segment.

CASE.

The case of the full-fed larva is nearly straight, irregularly cylindrical-oval, 7—8 mm. long by 2—2½ mm. broad across the middle; it is formed of cut-out pieces of leaf, and is smooth and somewhat polished, variable in colour from very dark brown to bright pale brown, rather flattened above and below, and with a distinct keel along each side at the junction of the upper and under surfaces; in general shape it might be compared to a young pea-pod. The anal aperture is gaping, the two flaps, which are dorsal and ventral, hardly approaching one another, while the mouth is not at all curved round but is rather oval in shape, with the upper lip longer than the under one. The case stands more or less perpendicularly to the leaf.

Hofmann speaks of the case as "laterally compressed with dorsal and ventral keels," but after examining the position of several cases fixed to leaves by the larvæ themselves, and the shape of the mouths of many more, it seems to me quite beyond question that these cases have been so carried by the larvæ that the keels have been lateral, and the broad and rather flattened surfaces have been dorsal and ventral. I do not forget that Hofmann had seen living larvæ, whereas I have not done so, but it occurs to me that he may have omitted to note down at the time the exact position of the case relatively to that of the larva, and afterwards assumed that this would be the same as in the allied species.

As regards the larval habits, which have not as yet been so fully observed in Britain as in Germany, the following is a *resumé* of Dr. Hofmann's interesting account of them.

The young larva begins, probably about June, by mining a leaf of

Vaccinium vitis-idæa, making in it a long narrow gallery spreading into an irregular blotch, both gallery and blotch being pretty well filled with brown frass, and closely resembling the work of a *Nepticula* larva. While still quite small it hibernates in its mine, but quits it early in the following spring, after making for itself a case formed from an elongate-oval piece cut out of the leaf. It is uncertain whether it now feeds at all, but if so, only for a little while, for still in early spring it attaches its case to a twig of the food-plant, or elsewhere, and so remains *without feeding* through the whole summer and winter until the following spring, when with the first warm days it moves to a leaf, usually fixing its case on the under-side near the stalk. The larva now mines a broad gallery into the leaf, following the margin, and leaving its frass in single heaps in the mine, which is not the habit of any other *Coleophora* larva; then when it has again reached the base of the leaf, it cuts out for itself a new case, leaving the old smaller one near the elongate-oval hole thus made. After moving to the under-side of a fresh leaf, and attaching its case thereto, it mines into it a long irregular blotch into which it advances with its whole body; henceforth, however, it no longer leaves its frass in the mine, but extrudes it through the end of the case as do the other leaf-mining *Coleophoræ*. Having mined several leaves, it finally spins up for pupation on to a twig at the end of April, and the moth emerges about the middle of May. I understand that in Scotland the dates of spinning up and emergence are usually about a month later than those given by Hofmann. The species is widely distributed in Germany, and recorded from Norway by Dr. Wocke, and one will confidently expect to hear of its being observed in other British localities besides Rannoch.

Its peculiar natural history makes it impossible to confuse *Glitzella* in its previous stages with any other known *Coleophora*, but in the imago state it is not always so easy to distinguish. Hofmann, when comparing it with *vacciniella* and *vitisella*, which also feed, the latter regularly, the former sometimes *(teste* Hofmann), on *Vaccinium Vitis-Idæa*, points out that *Glitzella* is decidedly the palest, and has the most strongly ochreous male, that *vacciniella* is darker, and the contrast in it between the wing and the ochreous base of the apical fringes is much more striking, while *vitisella* is the darkest of the three. *C. vacciniella* is not known as British, and the distinctions between British examples of the other two are by no means always so noticeable as in continental ones, owing to the Rannoch *Glitzella* being considerably darker than those from Germany.

The Rectory, Corfe Castle:
April, 1896.

SUPPLEMENTARY NOTE.

After the above was in type, Mr. Fletcher kindly sent me, on June 6th, some cases of *C. Glitzella* just received from Mr. W. Salvage from Rannoch; from these the moths emerged June 11th to 14th. Unfortunately, the larvæ had already pupated before they arrived, with the exception of one small one, barely 3 mm. in length; which was doubtless in its second year, and would not have fed up until next spring. It agreed with the preserved specimens above described except in its colour, which was reddish-orange, partially tinged on the segments with purplish, with the reproductive organs showing through as two dark purplish lozenge-shaped spots on the ninth segment. Perhaps the larva only assumes quite at the last a strongly reddish hue, which those examined by Hofmann had not yet acquired; and it may be that the preserved larvæ were more orange when alive. As regards the position of the case as carried by the larva, my opinion that the keels must be lateral, and the longer of the two surfaces, which lie between the keels, dorsal, has proved quite correct.

PUPA.

On June 8th I extracted a living pupa a few days before emergence, and made the following description:—

Length to end of abdomen, 4·5 mm. Greatest breadth, 1 mm.

Skin smooth, somewhat shining; segmental divisions rather well-defined.

Eyes large, black. *Antennæ cases* dark grey, of almost exactly equal length with, and lying next between, the margins of the wing-cases. *Head* dingy greyish-orange. *Thoracic segments* dark orange olive-grey. *Wing-cases* ochreous olive-grey, very long, reaching to within about 0.2 mm. of the extremity of the abdomen, though from the end of the fourth segment of the latter they lie well away from it. *Abdomen* dorsally greyish-orange, with a large dark greyish internal spot under the posterior part of the third and the anterior part of the fourth abdominal segments, and a similar one under the same parts of the fifth and sixth segments; the two latter are free. Posterior *leg-cases* lying with the wing- and antennæ-cases, with their extremities projecting between the latter to about 0·7 mm. beyond the end of the abdomen.

Dr. Chapman informs me that the way in which the first pair of legs covers a portion of the maxillæ, and also of the second pair, is peculiar.—E. R. B.: *June* 19*th*, 1896.

LEAF ROLLING AND THE DRAWING TOGETHER OF LEAVES.

BY H. GUARD KNAGGS, M.D., F.L.S.

Many years have passed since any observations respecting the rationale of this phenomenon have been recorded. The old idea was that the little larva, having fixed its thread of silk to certain points of a leaf or leaves, approximated the detached parts by the sheer force of its own strength. This theory was exploded by Wilkinson in his "British Tortrices" (1859), wherein he states as follows:—"The folding and twisting of the leaves and twigs is accomplished by means of an elastic silk, spun by the larva, usually of a whitish colour, which hardens and contracts on exposure to the air, and thus draws opposite portions of the leaves towards each other. A series of spinnings and contortions effect the end in view. The operation is therefore twofold: first, the act of the larva itself; secondly, the force exercised by the contraction of the silk; there is otherwise no accounting for the extraordinary folding and bending of stubborn leaves, obviously beyond the unassisted strength of minute larvæ."

Wilkinson's observations were corroborated by my friend Bernard Piffard, who, in an early number of this Magazine (Ent. Mo. Mag., ii, 15), wrote, "Now, from what I have observed, there appears to me to be another reason for the approximation of the portions of leaves spun together, viz., *the contractile power of the recently spun web itself*, which certainly shrinks very considerably in a short space of time; and this must be of (at any rate) great assistance to the leaf-rolling larva. That this contractility does exist can be made evident in the following experiment:—having attached a small piece of paper to one extremity of a newly spun thread a few inches in length, suspend it by fixing the other end of the thread to a firm object, and mark off the exact position of the lower end of the piece of paper. After a short time it will be found that the paper has been raised, in a very appreciable degree, above the mark at which its original position had been indicated."

Later on (Ent. Mo. Mag., iii, 279) I sent a note confirming the accuracy of my friend's remarks, and added, that the newly spun thread, when arranged as previously suggested, and damped by gently breathing upon it, contracted to one-half its length in the space of a few minutes. But these statements seem to me to be merely preliminary to a more thorough investigation of the matter, a study of which can hardly fail to bring to light new and instructive facts; there being so many points from which the subject may be viewed:—the movements of the larva itself; the production of the silk, its nature, contractility, and other properties; its possible uses, whether for other purposes besides those of defence against enemies and elements; the positions, times of day, atmospheric conditions affecting the process; and various other items.

My excuse for again bringing forward these memoranda is my hope that some or other of your readers may think it worth their while to follow up this interesting subject.

London: *May*, 1896.

ON A PROBABLE SENSE ORGAN IN THE MALE OF *PANORPA*.

BY ROBERT McLACHLAN, F.R.S., &c.

In probably all species of *Panorpa* on the 3rd and 4th dorsal abdominal segments of the male there is a peculiar structure, varying much in form, and often affording excellent specific characters. On the 4th it consists of a more or less developed spine or tooth directed backward, and usually concealed under a bristly flap or projection of the middle of the apical margin of the 3rd. Although I have never published such a statement, I was long inclined to consider this structure a stridulating organ, and am not yet convinced it is not so. Dr. E. P. Felt has recently alluded to it in a paper on "Scorpion Flies," in the 10th Report of the New York State Entomologist (1896). He had several times seen the female nearly resting the end of her rostrum on the dorsum of the abdomen of the male, and he inclines therefore to the opinion that the organ on the 4th segment is connected with a gland secreting a volatile oil attractive to the female. He offers this as a suggestion; its proof remains to be discovered. I may here remark that Dr. Felt appears to be insufficiently acquainted with my own writings on *Panorpidæ*. He quotes from my "British *Neuroptera-Planipennia*" (Trans. Ent. Soc. Lond., 1868) in stating that what he has found to be the 4th segment of the abdomen I consider to be the 3rd. But he omits to say that I expressly stated (p. 209, foot-note) that I followed previous authors in giving only *eight* abdominal segments, but that "it appears probable that there are in reality *nine*." Furthermore, in my "Synopsis of the species of *Panorpa* occurring in Europe" (Trans. Ent. Soc. Lond., 1869), I distinctly stated (p. 60, foot-note), "Panorpæ abdomen censeo novem segmenta habere," and in all my numerous writings on the genus since that date I have always adhered to nine as the correct number. It is apparently through not having himself seen my paper of 1869 that he has misunderstood a quotation from it by Scudder (Bull. U. S. Geol. Survey, iv, 1878, p. 542) respecting *P. nematogaster*, McLach. The "curious appendage to the 3rd joint" of the abdomen there referred to, concerns the strongly modified flap of the 3rd segment in that species, and not the tooth or tubercle of the 4th.

I take this opportunity of stating that it is highly desirable a revision of the North American species of *Panorpa* should be made. The species were mostly described by Klug, Westwood and Hagen. The types mostly exist in Berlin, London and Cambridge (Mass.), and in each case under circumstances that forbid their being "communicated." When the descriptions were written the crucial specific characters were not fully understood; neither was the variation from local causes that undoubtedly influence some species.

Lewisham, London:
June 6th, 1896.

NOTES ON *TRICHOPTERA* (INCLUDING *AGRYPNIA PICTA*, KOL.), TAKEN IN UNST (SHETLAND), 1895.

BY JAMES J. F. X. KING, F.E.S.

Last season, while in Unst, I picked up, rather than collected, a number of *Trichoptera*, and as all notes of captures from this northern isle are interesting, I make this my plea for bringing forward this short sketch.

I recorded 32 species in this Magazine as having been taken by myself in 1889. In these notes I only mention 27 species, but three of these are new to the 1889 list, namely, *Agrypnia picta*, *Limnophilus stigma*, and *Micropterna sequax*. The reason why there is such a difference in the total number of species taken in the two seasons is to be found in the fact, that in the former year I devoted almost all my time to the *Trichoptera*, and last year to the *Lepidoptera*.

The species which so far was the most interesting of the Unst *Trichoptera* is *Mesophylax impunctatus*, McL.; to this I devoted a considerable amount of attention, but I am sorry to say with but poor result last season. In 1889 this species occurred more or less all over Crussafield, flying at night along the little streamlets which had hollowed out a ditch-like course in the hard ground: by sweeping the herbage which grew along these courses the species might be taken in company with *Rhyacophila dorsalis* in the proportion of one to about fifty of the latter. Since my visit in 1889 the aspect of Crussafield has been changed, for where we used to find deep channels, we now have a swamp and no place for the insects to hide, in fact, on this ground where formerly I might have taken hundreds of *R. dorsalis*, I do not believe I saw over a score, and not one of the rare species. However, when searching for *Hepialus humuli* a few specimens were caught on the wing near Loch of Cliff.

The capture of the year was a pair of *Agrypnia picta*, Kol. This species had hitherto been known as British from a specimen taken on a gas lamp near London by Mr. Pryer. Over thirty years ago Mr. McLachlan, when writing about this species, said that probably it would be taken in the northern part of Britain, and in fact this present record is due to him, as the specimens had been put down as a variety of *Phryganea obsoleta*, but something in my notes led him to suggest that my insects might be *A. picta*; on more careful examination I found that he was correct.

The following is a list of the *Trichoptera* taken :—

Phryganea varia, F., not uncommon.

Agrypnia picta, Kol., ♂ and ♀, Loch of Cliff.

Colpotaulius incisus, Curt., this species was not uncommon along the various waters by sweeping the long grasses in the morning, some of the specimens are very small, as mentioned in the former list.

Limnophilus rhombicus, L., common near Loch of Cliff, the males measuring 32 to 36 mm., and the females 35 to 36 mm.; *marmoratus*, Curt., fairly common; *stigma*, Curt., was very common near Burrafirth, there is not much to mention about this species except to say that the females vary in expanse of wings from 23 to 35 mm., and the males from 28 to 30 mm.; *lunatus*, Curt., a small ♀ was taken near Loch of Cliff, 25 mm. across wings; *vittatus*, F., not uncommon; *affinis*, Curt., fairly common; *auricula*, Curt., not uncommon; *griseus*, L., one specimen of this occurred at Virdafield; *sparsus*, Curt., common.

Stenophylax latipennis, Curt., common; *permistus*, McL., was very common at sugar, I did not examine them at the time, and thus passed them over as large *latipennis*, the expanse of wings, males, 35 to 42 mm., females, 39 to 44 mm.

Mesophylax impunctatus, McL., var. *zetlandicus*, McL., only a few taken at Loch of Cliff.

Micropterna lateralis, Steph., not uncommon, males varied from 27 to 32 mm. in expanse of wings; *sequax*, McL., one ♂ occurred at Haroldswick by sweeping.

Drusus annulatus, Steph., common.

Lepidostoma hirtum, F., common.

Leptocerus fulvus, Ramb., common; *cinereus*, Curt., common.

Mystacides azurea, Curt., common.

Œcetis ochracea, Curt., common.

Cyrnus trimaculatus, Curt., common.

Tinodes wæneri, L., common.

Plectrocnemia conspersa, Curt., a few specimens of this were taken.

Rhyacophila dorsalis, Curt., I did not see so many specimens of this as I did on my former visit.

207, Sauchiehall Street, Glasgow:
May, 1896.

INQUILINE AND OTHER INHABITANTS IN NESTS OF ACULEATE *HYMENOPTERA*.

BY W. H. TUCK, M.A.

For the last seven autumns (1889—1895) I have examined a large number of various nests, and am now able to give a complete list of my captures. I am indebted to Mr. E. A. Butler for valuable assistance in determining the different species, and to Dr. R. Meade for the list of *Diptera*.

The seasons of 1890 and 1893 were by far the best for the rarer captures.

I may mention that the earliest wasp in my district is *Vespa sylvestris*, and the latest *V. vulgaris*. I have found a nest of the latter in working order as late as December 5th.

The nests of the large *Bombi* in this enclosed country are not easy to find, and still more difficult to explore, except when quite in the open.

The following are the nests opened up, all in my own parish, and as a rule single-handed, as I have no one in Suffolk who can render me any assistance:—*Vespa crabro* (2), *V. vulgaris* (94), *V. germanica* (30), *V. rufa* (1), *V. sylvestris* (3), *Bombus venustus* (6), *B. agrorum* (8), *B. Latreillellus* (2), *B. hortorum* (1), *B. hortorum* [*Harrisellus*] (1), *B. sylvarum* (3), *B. lapidarius* (2), *B. terrestris* (1).

COLEOPTERA.

The names are nearly all taken from Sharp's Catalogue, 2nd edition, 1883.

Bradycellus distinctus (*Bombus agrorum*).

Harpalus æneus (*B. hortorum*), I found about six of these in the cells.

Amara lunicollis (*B. venustus*), probably only casual intruders.

Anchomenus prasinus (*Vespa vulgaris, germanica*).

Bembidium 4-maculatum (*B. muscorum, sylvarum*).

Trechus minutus (*V. vulgaris, B. sylvarum*); *obtusus* (*V. vulgaris*).

Calathus cisteloides (*V. vulgaris*), on several occasions.

Pterostichus madidus (*V. vulgaris, germanica*).

Metabletus foveola (*V. vulgaris, germanica*).

Helophorus nubilus (*V. germanica*); *griseus* (*V. germanica*); *brevipalpis* (*V. vulgaris*).

Cercyon granarius (*V. vulgaris*); *lateralis* (*B. Latreillellus*).

Megasternum boletophagum (*B. agrorum*).

Aleochara mæsta (*V. vulgaris*), not very abundant; *fuscipes* (*V. vulgaris*).

Myrmedonia limbata (*V. vulgaris*).

Homalota æneicollis (*V. vulgaris*); *fungicola* (*V. vulgaris, B. agrorum*); *fusca* (*V. vulgaris*).

Conurus pubescens (*B. agrorum*).

Tachinus rufipes (*B. agrorum*).

Tachyporus chrysomelinus (*B. agrorum*); *hypnorum* (*B. agrorum*); *obtusus* (*V. vulgaris*, *B. agrorum*).

Heterothops 4-punctulus (*B. Latreillellus*), one specimen only.

Velleius dilatatus (*V. germanica*), a perfect insect and several larvæ from a nest in a tree stump, 1890; a friend managed to rear one of the larvæ. The late Prof. Henslow found 40 larvæ in a nest of *V. crabro* in this county.

Quedius fulgidus (*B. terrestris*); *mesomelinus* (*V. vulgaris*, *B. agrorum*); *nigrocæruleus* (*B. hortorum*, v. *subterraneus*); *picipes* (*V. vulgaris*, *B. venustus*); *puncticollis* (*V. germanica*); *suturalis* (*V. vulgaris*), *vide* Ent. Mo. Mag., Series II, Vol. vii, p. 50).

Ocypus olens (*V. vulgaris*), this was evidently in winter quarters, as it was torpid at the bottom of the nest in December.

Philonthus albipes (*V. vulgaris*); *fimetarius* (*V. vulgaris*, *B. Latreillellus*); *politus* (*V. vulgaris*); *sordidus* (*V. vulgaris*); *trossulus* (*B. hortorum*).

Xantholinus linearis (*B. agrorum*, *venustus*, *Latreillellus*); *longiventris* (*B. Latreillellus*); *punctulatus* (*V. vulgaris*, *B. Latreillellus*); *tricolor* (*B. venustus*).

Othius melanocephalus (*B. venustus*).

Stilicus rufipes (*V. germanica*, *B. agrorum*).

Sunius angustatus (*B. agrorum*).

Stenus brunnipes (*B. venustus*); *bimaculatus* (*V. vulgaris*); *similis* (*V. vulgaris*); *speculator* (*B. agrorum*).

Oxytelus insecatus (*B. Latreillellus*); *nitidulus* (*V. vulgaris*, *B. agrorum*); *rugosus* (*V. vulgaris*, *B. agrorum*, *venustus*); *sculpturatus* (*V. vulgaris*).

Omalium cæsum (*B. agrorum*, *venustus*, *sylvarum*); *concinnum* (*V. vulgaris*, *B. hortorum*, *agrorum*); *rivulare* (*V. vulgaris*, *B. agrorum*, *sylvarum*).

Lathrimæum unicolor (*B. sylvarum*).

Proteinus brachypterus (*B. agrorum*); *brevicollis* (*V. vulgaris*); *ovalis* (*V. vulgaris*).

Megarthrus sinuaticollis (*V. vulgaris*).

Prognatha quadricorne (*V. germanica*).

Choleva grandicollis (*V. vulgaris*); *nigricans* (*V. vulgaris*, *germanica*); *nigrita* (*V. vulgaris*); *Watsoni* (*V. sylvestris*); *sericea* (*B. venustus*, *agrorum*); *tristis* (*V. vulgaris*); *chrysomeloides* (*V. vulgaris*); I generally take one or two every season.

Stilbus testaceus (*V. germanica*).

Epuræa obsoleta (*V. vulgaris*); *æstiva* (*B. agrorum*, *sylvarum*, *Latreillellus*), I once took upwards of 60 in a nest of the last, in a clover field, the nest was formerly occupied apparently by field mice.

Omosita colon (*B. agrorum*); *discoidea* (*B. agrorum*, *sylvarum*).

Lathridius nodifer (*V. vulgaris*).

Cryptophagus setulosus (*V. vulgaris*, *germanica*, *B. agrorum*, *hortorum*, *sylvarum*, *terrestris*); *pubescens* (*V. vulgaris*, *germanica*), Mr. Butler notices that many of these have their antennæ mutilated by wasps; *umbratus* (*B. Latreillellus*), one specimen only; *punctipennis* (*B. agrorum*, *hortorum*, v. *subterraneus*); *pilosus* (*V. vulgaris*); *scanicus* (*V. vulgaris*, *B. venustus*); *saginatus* (*B. venustus*).

Antherophagus pallens (*B. agrorum*, *lapidarius*, *sylvarum*); *nigricornis* (*B. Latreillellus*).

Atomaria ruficornis (*V. vulgaris*); *peltata* (*B. Latreillellus*).

Mycetophagus 4-guttatus (*V. vulgaris*).

Dorcus parallelopipedus (*B. lapidarius*), in a nest in a wall, formerly tenanted by *Parus major*.

Ptinus fur (*V. crabro, germanica*).

Corynetes cæruleus (*V. crabro*).

Metæcus paradoxus, this beetle is rather common with me, I only find it in the nests of *Vespa vulgaris*, and I looked for it accordingly this season; the earliest date I have taken the perfect insect is August 2nd, and the latest September 24th; two or three are the usual number in a nest, but I once found twenty-four.

Otiorrhynchus scabrosus (*V. vulgaris*).

Cœliodes 4-maculatus (*B. agrorum, V. vulgaris*).

Apion flavipes (*V. vulgaris, B. agrorum*); *humile* (*B. agrorum*); *nigricans* (*V. vulgaris*); *nigritarse* (*B. agrorum*).

Phyllotreta vittula (*V. vulgaris*).

HEMIPTERA-HETEROPTERA.

Reduvius personatus (*V. germanica*), this nest was in a rat's hole near buildings.

Anthocoris sylvestris (*B. agrorum*).

Lyctocoris campestris, larva (*B. agrorum*).

Triphleps majusculus (*V. vulgaris, B. agrorum*).

HEMIPTERA-HOMOPTERA.

Acocephalus nervosus (*V. germanica*).

ACULEATE HYMENOPTERA.

Stenamma Westwoodi (*B. terrestris*).

Myrmosa melanocephala (*V. sylvestris*).

LEPIDOPTERA.

Aphomia colonella (*B. agrorum*), a large colony.

DIPTERA.

Acanthiptera inanis (*V. germanica*).

Brachicoma devia (*B. hortorum*).

**Chrysotoxum festivum* (*B. lapidarius*).

**Eristalis intricarius* (*B. agrorum*).

Myathropa florea (*V. rufa*).

**Leucozonia lucorum* (*B. terrestris*).

**Physocephala rufipes* (*V. rufa*).

Phora florea (*V. germanica*).

**Volucella pellucens* (*V. rufa*).

**Xylota segnis* (*V. germanica*).

CRUSTACEA, &c.

Philoscia muscorum (*V. vulgaris*).

Oniscus asellus (*B. Latreillellus*).

Armadillo vulgaris (*B. Latreillellus*).

Lepisma saccharina (*V. crabro*).

Chelifer cancroides (*B. Latreillellus*).

Bury St. Edmunds: *May*, 1896.

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* Bred from the full grown larvæ.

Entomological Notes from the North of Ireland in 1895.—The very severe weather of the early part of the year rendered collecting practically impossible. I spent the first three weeks of January at Coolmore, on the coast of Donegal, and succeeded in taking some *Coleoptera* in moss gathered on the sandhills. Insects were not plentiful, for even on the western seaboard the low temperature made itself felt. My principal captures were *Mycetoporus nanus*, *Philonthus micans*, *Ph. vernalis*, *Sunius diversus*, *Pselaphus Heisei*, and *Longitarsus atriceps*. These were obtained at the very beginning of the month, before the frost had set in severely. From that time till March I was unable to do any outdoor collecting. In my pupa box, however, moths began to emerge, and on February 8th *Phigalia pilosaria*, ♂ and ♀, came forth, the latter being of a beautiful yellow tinge; further on in the month *Hybernia progemmaria* emerged, and in March the *Tæniocampæ* began to appear. After the breaking up of the frost in March I began to obtain a few beetles. Searching under bark of willow and apple trees produced *Anchomenus gracilis*, *Lathrobium quadratum*, and *Phyllodecta cavifrons*, with commoner species. On March 21st I captured *Dytiscus circumcinctus*, ♀, in Mullinure, and on the 28th in flood rubbish obtained two specimens each of *Pselaphus dresdensis* and *Erirrhinus æthiops*.

Sallows had been kept back very much by the long frost, but in April they began to bloom, and I took some *Hymenoptera* at the blossoms, comprising *Andrena cineraria*, *A. albicans*, *A. Clarkella*, and *Bombus terrestris*, and a specimen of *Nomada borealis* flitting along a hedgerow. At night I tried the sallows for *Tæniocampæ*, and was fairly successful, obtaining, besides *T. gothica*, *T. stabilis*, and *T. instabilis*, the rarer *T. gracilis* and *T. opima*, also a nice example of *Xylocampa lithorhiza*, while on the wing I captured *Anticlea derivata*, *A. badiata*, *Selenia illunaria*, and one *Peronea hastiana*. *T. gothica* was exceedingly plentiful, but showed no variation, except in lighter or darker shade of ground-colour.

The first butterflies appeared on April 17th, viz., *Vanessa urticæ* and *Pieris napi*. The following day, which was particularly fine, while walking to Lowry's Lough, I took a specimen of *Silpha opaca* flying across the road. Numbers of *Aphodii* were also on the wing in the bright sunshine, but they were only the common *A. prodromus*.

May, as usual, brought many insects about. At Lowry's Lough I took quite a number of *Blethisa multipunctata* by going down on my knees and grubbing at the roots of *Carex*, &c. Along with it were *Pelophila borealis*, *Anchomenus junceus*, *A. gracilis*, *Bembidium Doris*, *B. flammulatum*, and *Hygronoma dimidiata*. In suspicious proximity to a dead fish I took a single *Leistotrophus murinus*, and its ally, *L. nebulosus*, was obtained a few days afterwards running on the road just outside Armagh.

On May 23rd, on the way to Lowry's Lough, I took several *Halictus rubicundus*, ♀, and *H. albipes* at their burrows in the footpath. Beating the hedges produced *Eubolia palumbaria*, *Catoptria ulicetana*, and *Depressaria capreolella*. On the 25th I drove to Lough Neagh, stopping as usual at Churchill on my way. Here I obtained *Thecla rubi*, *Eupithecia nanata*, *Fidonia atomaria*, *Phoxopteryx uncana*, *Gelechia ericetella*, flying about the heather, &c. Mrs. Johnson took *Elater pomorum* on the way, and by beating and sweeping I captured *Cœliodes rubicundus*.

At Lough Neagh, besides *Dyschirius obscurus* (*vide* Ent. Mo. Mag., II, vol. vi, p. 218) we took *Bembidium bipunctatum*, *Bledius subterraneus*, *B. fracticornis*, and *Silpha sinuata.*

At Annaghroe, near Caledon, County Tyrone, on May 29th, *Psylliodes chrysocephala* was very abundant on young turnips; I also took *Rhizophagus cribratus* and *Corymbites quercûs*, var. *ochropterus.*

On June 3rd I captured a nice specimen of *Chærocampa elpenor* in the garden at Winder Terrace, Armagh; it was hovering at a turkcap lily. On the same evening I also took *Herminia grisealis*, a species I had not obtained at Armagh previously.

At Lowry's Lough (June 5th) the Trichopteron, *Molanna palpata*, was in abundance; of *Coleoptera* my captures were *Bagous alismatis*, *Litodactylus leucogaster*, *Eubrychius velatus*, and *Baridius T-album*; the Hemipteron, *Microvelia pygmæa*, in the developed form, also occurred. On the following day I again visited Lowry's Lough to obtain *Philonthus quisquilarius*, var. *dimidiatus*, of which I took a number by splashing water over the shore where they were hidden under stones. On a subsequent visit I obtained a specimen of *Cercyon aquaticus*, being the first I had met with. I tried sugar several times, but the only moth worth mentioning that I obtained at it was *Gonophora derasa.* In the autumn sugar was a complete failure, night after night not a single moth appeared. In my garden I met with *Plusia festucæ*, *P. pulchrina*, *P. iota*, *P. chrysitis*, and plenty of *Cucullia umbratica.*

Hepialus velleda, var. *gallicus*, *Gonophora derasa*, *Noctua plecta*, *Plusia chrysitis*, *Boarmia repandata*, *Cabera pusaria*, *Larentia viridaria*, *Aphelia pratana*, &c., occurred in Mullinare at a great mass of yellow bedstraw.

On June 23rd I went over to Loughgilly to spend the afternoon with the Rev. H. Harpur, and work at the insects of that locality. By sweeping in damp meadows I took *Microcara Bohemani* and *Anisotoma calcarata.* As I was sweeping I noticed on a thistle what I supposed to be a bright green beetle, and forthwith whipped it off with my net. To my surprise and delight it proved to be *Procris statices.* I was unable to find other specimens, and as it was rather worn I was possibly late. I hope, however, this summer to be more fortunate, as I am now within walking distance of Loughgilly.

Among some *Coleoptera* taken by the Rev. S. A. Brenan at Ballintoy, Co. Antrim, were some very large *Otiorhynchus atroapterus* and a few of the large white form of *Atactogenus exaratus*, similar to others I had taken on the Donegal coast.

July, which is usually a very productive month for me, as I have holidays, was spoiled by rain. I was at Keady for a couple of days, and at Clay Lake took *Pelophila borealis*, *Bembidium atrocæruleum*, *B. punctulatum*, and *B. bipunctatum*; also under stones that I had turned in searching for beetles a couple of the Neuropteron, *Phryganea striata.* Rain prevented a proper search for insects.

I managed to capture some *Hymenoptera Aculeata* in my garden, a large plant of *Geranium pratense* proving very attractive. Among my captures were *Odynerus parietarius*, *Halictus cylindricus*, *Andrena Gwynana*, *A. fucata*, *Cœlioxys acuminata*, and *Megachile centuncularis.*

On the 15th Mrs. Johnson and I took a trip to Greenore. Under stones were

Amara fulva and *A. bifrons*. On *Honckenya peploides* were *Anthicus scoticus*, *Melanophthalma fuscula*, *Cassida flaveola*, and a single *Sitones humeralis*, which was captured by Mrs. Johnson; also a couple of the Hemipteron, *Nysius thymi*. We missed the last train and had to stay for the night at the hotel, and in the dusk captured *Herbula cespitalis*, *Sciaphila conspersana*, *Xanthosetia zœgana*, and *Depressaria liturella*.

On the 27th there was a flood in Mullinure consequent on the heavy rains, and I got a couple of bags of refuse. In this I found three *Erirrhinus æthiops* and one *Hippodamia* 13-*punctata*. Besides these two species were a multitude of others, but of usual occurrence at Armagh.

On August 8th I visited Camlough Lake, near Bessbrook; beetles were not plentiful, but I obtained *Pelophila borealis*, *Taphria nivalis*, *Bembidium flammulatum*, *Staphylinus cæsareus*, and *Barynotus Schönherri*, with other commoner species. The lake is a long, narrow one in the cleft of the hills, and with a more favourable time and with better opportunities might produce interesting species.

Loughgall is a favourite and productive locality, so Mrs. Johnson and I drove out there on August 10th. In the Manor grounds I took a ♀ of *Acilius fasciatus*, and a specimen of *Aphodius fœtens*. Of *Lepidoptera* I may record *Grapholitha ramella* (*Paykulliana*), *G. nisella* (*nisana*), *Argyresthia semitestacella*, and *A. nitidella*. The remainder of August was more or less a blank owing to bad weather.

On September 4th I went to Tynan to look for *Bledius fracticornis* on the canal bank. I obtained a goodly number, and also a specimen of *Necrophorus humator*, the latter in a dead hedgehog. I found a *Plusia festucæ* sitting on *Carex*, and caught the Hymenopteron, *Mellinus arvensis* on the wing.

On September 26th I received a fine *Acherontia Atropos* which had been caught at Bessbrook, Co. Armagh, and on October 19th, while digging for pupæ in the Palace Demesne, I took a specimen of *Xanthia ferruginea* at the foot of a tree. The remainder of the year I was too busy with other matters to do any collecting, and my removal here opens up new and untried ground, and I am looking forward with a certain amount of excitement to the results of the collecting campaign which I have already opened with some success.—W. F. Johnson, Acton Glebe, Poyntzpass: *March 3rd*, 1896.

Swarm of Geotrupes stercorarius, L., at Poyntzpass.—On March 22nd, at about 7.30 p.m., two boys came to me in a great state of excitement to tell me that there was a swarm of beetles at the railway station. One had a large cardboard box and the other his coat pocket full of the beetles, in all some 70 specimens. On examination they proved to be *Geotrupes stercorarius*. I was at the railway station the next morning, and on the pathway and road were numbers of the beetles, dead, where they had been trodden on by the people on the previous evening. I can only account for the presence of such numbers by the circumstance of a large cattle fair being held monthly in Poyntzpass and the consequent presence of a large quantity of cow-dung at the station from the cattle that are removed by rail. I have noticed that *Geotrupes* is very abundant about here, and on favourable evenings their numbers are quite remarkable.—Id.: *May 5th*, 1896.

Coleoptera at Dover in April.—On the 15th of last April I joined my friend Mr. Ernest Elliott at Dover, promising myself a good fortnight's beetle-collecting. The weather was, for the most part, particularly propitious, though, towards the end of the month, somewhat too dry perhaps for ideal sweeping. The result of our campaign, even in so well-worked a locality, may be of interest.

Carabus monilis and *C. violaceus* were common, especially under clods in ploughed fields, the searching of which repaid us well, for in such situations the following were also taken: *Leistus spinibarbis*, *Harpalus azureus*, *H. rupicola*, *H. rubripes*, &c., *Stomis pumicatus* (not uncommon), *Amara apricaria*, *A. ovata*, *A. similata*, *A. communis*, *A. plebeia* (a dark var.), and *A. acuminata*, *Olisthopus rotundatus*, *Brachinus crepitans* (somewhat commonly), and nine species of *Bembidium*, of which *assimile* was the only one at all uncommon. *Elaphrus riparius*, *Badister unipustulatus*, *Chlænius vestitus*, *Pterostichus anthracinus* and *P. nigrita*, *Anchomenus marginatus* and *A. viduus*, var. *mæstus* were all common in the mud, or under stones on the margin, of a dried-up pond. One *Pterostichus versicolor* occurred running in the road in the bright sunshine. *Aleochara lata* and several *Philonthi*, with *Creophilus*, &c., were abundant in a refuse heap. *Philonthus albipes*, *marginatus*, *ebeninus*, and *laminatus* occurred in dung. *Myrmedonia limbata* turned up singly among *Lasius flavus*. *Ocypus similis*, *O. cupreus*, &c., and *Platystethus arenarius*, *P. capito*, and *P. nodifrons* were met with in the roads. *Necrophorus vespillo*, one specimen, by sweeping luxuriant herbage in a very damp meadow! *Silpha lævigata* and *S. atrata* were abundant, with one or two of a variety of the latter. *S. obscura* occurred on the roads and under clods, with *Choleva agilis* and *Ch. angustata*.

Onthophagus ovatus, the only species of the genus seen, was somewhat common in sheep dung. Of *Aphodius* we met with twelve species, of which the best were *A. 4-maculatus*, five specimens each, and *A. consputus*, a very few, both *in stercore ovino*, with such common forms as *A. putridus*, *erraticus*, *fimetarius*, *inquinatus*, *luridus*, and *merdarius*, the last two abundantly. *Plagiogonus arenarius* also occurred. *Lacon murinus* was rare, and one *Lema puncticollis* was swept from *Mercurialis perennis*. *Chrysomela hyperici*, *C. lamina*, and *C. distinguenda* put in an appearance, with *Phædon tumidulum*, &c. *Halticidæ* were somewhat common, and we secured good series of *Hermæophaga mercurialis*, *Phyllotreta nemorum*, *lepidii*, and *nodicornis*, *Aphthona venustula* (abundant on spurge), *herbigrada*, and *atrocærulea* (on water), *Batophila rubi*, *Mantura Matthewsi* (swept on a barren hill-side), and *M. rustica*, *Thyamis atricilla*, *Th. femoralis*; *Crepidodera rufipes*, the only species of the genus noted, was uncommon, *Psylliodes affinis*, fairly common, and *Ps. cuprea* in a chalk pit. Fourteen species of *Apion* occurred, and those of the commonest, excepting, perhaps, *A. vorax*, *A. pubescens*, and *A. difforme*. *Otiorrhynchus tenebricosus* and *Liophlœus nubilus* were swept singly. One *Molytes coronatus* was taken walking in a field-path, and one *M. germanus* on a chalky road; Mr. Elliott took the latter here last year. *Sitones crinitus*, *Liosoma ovatulum*, *Orchestes fagi*, and *Cœliodes fuliginosus* were not uncommon; *Erirrhinus acridulus* swarmed with *Prasocuris phellandrii* and *P. beccabungæ* on the margins of the dried-up pond before referred to.

The most noticeable feature of the list is the preponderance of *Geodephaga* and *Halticidæ*, and this cannot be ascribed to their having been especially worked for but rather to the fact that the locality is an unusually rich one in these beetles. In all we recorded 240 species of *Coleoptera* between April 15th and 29th, when we left Dover.—Claude Morley, Ipswich: *June*, 1896.

Coleoptera at Eastbourne (and Polegate), Sussex.—The same *modus operandi* was pursued at Eastbourne as at Dover, but here we made our best captures under the great lumps of chalk bordering the fields at the base of the downs. *Stilicus rufipes*, *Conurus pubescens* and *C. immaculatus*, *Eumicrus tarsatus*, *Exomias brunnipes*, and *Stomis pumicatus* (commoner than at Dover), were taken in such a situation. I picked up *Philonthus quisquilarius*, var. *dimidiatus*, on the golf links on May 5th, and sweeping just below Beachy Head produced *Hypocyptus longicornis*, *Ceuthorrhynchus quadridens*, *Anthonomus rubi*, two or three *Psylliodes chrysocephala*, with *Phyllotreta nigripes* and *P. atra* abundantly, &c.

On May 9th I went to Polegate and took at the Abbot's Wood, where, however, things were scarcely yet in full force, a few *Philonthus ? umbratilis* on the margin of a pond, with *Stenus providus*, var. *Rogeri*, *Heterocerus fusculus*, and a few *Prasocuris aucta*. But few insects fell to the umbrella; the best being *Haplocnemus nigricornis* (1), *Dasytes plumbeo-niger*, *Orchestes ilicis*, *Haltica palustris*, *Magdalinus cerasi*, and *Balaninus nucum* were also secured. *Crepidodera aurata* fell in showers, and very pretty the tiny drops of metallic red, green, and bronze looked in the sunshine. From horse dung in a narrow path overhung by trees in the wood I found *Aphodius sticticus* in abundance, with one or two *Onthophagus cœnobita* and *O. ovatus*.—Id.

Xyletinus ater in Herefordshire.—On Sunday Afternoon, May 24th, on a gate post close to Burghill Church, I noticed three beetles of *Anobium* aspect, but black and striated, so as to convince me I was not familiar with them. They appeared to be a female newly emerged and two males which she had attracted, and with one of whom she assumed connubial relationship during the few seconds that I observed them. Determining them to be *Xyletinus ater*, I sent them, however, to Canon Fowler for certainty, and as he expressed a desire to know more about them, I again visited the post. It is a not very old oak post, in which the beetles have completed the destruction of a slip of sapwood which is now beginning to rot. Their burrows are rather large, but of *Anobium* irregularity. I found one still in the wood, and one on the surface of the post. From the commencing rottenness of the wood, and the absence of any larvæ or other beetles, there is no doubt the whole brood has now emerged, possibly many of them last season.—T. A. Chapman, Firbank, Hereford: *May*, 1896.

Emus hirtus, L., at Sittingbourne, Kent.—Mr. J. J. Walker, of Sheerness, has kindly been assisting me in the arrangement of our school collections of *Coleoptera*, etc.; he says that we ought to record in the Ent. Mo. Mag. the capture on May 30th by my friend Rupert Dering and myself of a very fine female specimen of *Emus hirtus* feeding in horse dung in the Park here.—A. S. Carr, Gore Court School, Sittingbourne: *June*, 1896.

[This very rare beetle has occurred in several places in Kent and Surrey, but its chief locality appears to be the New Forest; the specimen above mentioned is the first that has been recorded for a long period.—W. W. F.].

Heterostethus pictus, Schwarz.—In the Deutsche entom. Zeitschrift, 1896, Heft 1, p. 147 (May), a supposed new genus and species of *Elateridæ* is characterized by Herr O. Schwarz under the name of *Heterostethus pictus*, based upon two specimens from Paraguay. The insect in question is certainly referable to *Cryptohypnus squamifer*, Cand., for which the generic name *Agrypnella* was proposed by myself in December last (Biol. Centr.-Am., Col. III, 1, pp. 414, 415, t. 18, figg. 21, 21*a*, *b*). Its characters have been fully described and figured by me. *Agrypnella squamifera* is a widely distributed insect in the warmer parts of America, but apparently everywhere rare, ranging from Guatemala to Monte Video, and also occurring at Grenada in the West Indies. The type (described by Candèze in 1864) was found at Pará by Bates, who also met with another species of the same genus (*C. eburnea*, Champ.) at Santarem. *Agrypnella* seems to me to be more nearly allied to the *Agrypnini* (near *Meristhus*) than to the *Cryptohypnini*. Its most important characters were overlooked by Dr. Candèze.—G. C. Champion, Horsell, Woking: *June* 13*th*, 1896.

Ischnomera sanguinicollis, Fab., at West Clandon, near Guildford.—On the evening of the 28th of last month (May) I swept a single specimen of this beetle off some low growing elm in the road leading from the Clandon railway station to West Clandon Church. This is, I believe, a new locality for it. It has been recorded from Coombe Wood and Windsor Forest; Bristol, Ireland and New Forest by Stephens; and in the last locality it occurs, I believe, annually, though rarely. Windsor Park (Turner) and Sherwood Forest (Blatch) are the only other localities given by Fowler in his British *Coleoptera*; so that a fresh locality may be of interest to Coleopterists. Unfortunately further search failed to produce another specimen.—Edward Saunders, St. Ann's, Woking: *June* 10*th*, 1896.

Honey Bees destroyed by wood ants (*Formica rufa*).—An interesting instance of the destructive powers of the large wood ant has been lately brought to my notice. A friend of mine living at Long Cross, near Chertsey, has had two hives of bees entirely destroyed by these little creatures, and a third was only saved by the gardener opening the hive and taking the ants out with his hands, during which process my friend tells me the bees did not attempt to resist his intrusion, but seemed quite to realize that what was being done was for their benefit. I have not before heard of a case like this, but possibly in some other pine wood districts where *F. rufa* is more abundant, it may be well known that they are dangerous neighbours to bee keepers.—Id.

"*Flies riding on beetle-back.*"—The interesting note on this subject by the Rev. A. E. Eaton (p. 139 *ante*) has induced me to look up my old Mediterranean journal, in which I remembered having entered an observation of the same nature. Under date of September 10th, 1874, at Tangier, is the following note:—"The large punctured *Ateuchus* (*variolosus*, F.) observed at Gibraltar was not rare here (on the sandhills to the eastward of the town), occurring in holes in the sand, crawling about and on the wing. I caught one flying, and was greatly surprised to see that, instead of *mites*, as in the case of our *Geotrupes stercorarius*, &c., it was covered with minute black *flies*, which were evidently using this (to them) gigantic creature as a sort of horse." While at Gibraltar in 1886—1889, I repeatedly noticed this curious habit, the little flies, which are less than a line in length, being found clustered on the beetle—sometimes to the number of 20 or 30, and chiefly on the under-side—which, to me, always appeared to be supremely indifferent to their presence.* As these flies are often found in great numbers on the usual pabulum of *Ateuchus*, it is probable that they frequently use the beetle as a means of conveyance from one deposit to another, without any trouble to themselves. The favourite steed of these little riders appeared to be *Ateuchus variolosus*, owing doubtless to its somewhat rough exterior affording a secure foothold; I have sometimes noticed the flies on *A. sacer*, but have never, to my recollection, seen them on any other of the large *Coprophaga* (*Copris*, *Bubas*, *Onitis*, *Geotrupes*, &c.) which are so plentiful at Gibraltar, perhaps because these genera are less diurnal than *Ateuchus*.—J. J. WALKER, Sheerness: *June 8th*, 1896.

Chrysocephala nigra, De G., in the New Forest.—I took a fine specimen of this rare fly in the Rhinefield Enclosure, New Forest, on May 29th last, and when I showed it to Mr. Austen, I think he said it was only the second specimen authenticated as British.—F. C. ADAMS, 68, St. Ermin's Mansions, S.W.: *June*, 1896.

Notes on Leucania favicolor.—I have, since my note (*ante*, p. 138) was written, had a chance of examining the specimens which Mr. Barrett has named *L. favicolor*. They are not *L. impura, ab. punctalinea* as suggested by me, but appear to me to be an aberration of *L. pallens*, exactly parallel with that of *L. impura*. It is, of course, the normal thing for *L. straminea* to have a series of dots crossing the fore-wings and forming what is commonly known as the elbowed line, but the aberration in which a similar line of dots occurs in *L. impura* is very rare, and hitherto I had not seen it in what I supposed to be *L. pallens*.—J. W. TUTT, Westcombe Park: *June 4th*, 1896.

On the cocoon of Acronycta aceris.—I have reared four *Acronycta aceris* from larva obtained last autumn. On examining the empty cocoons in my cage I found their construction rather curious. They were attached to the top corners, and consisted first of a loose outer web of silk on which the larva had placed its hairs; and then a hard covering of silk mixed with very tiny chips of wood from the side of the cage, less hard, and smaller, but otherwise similar to that constructed by *Cerura vinula*; its texture was very tough, and it fitted so closely round the pupa that it is difficult to understand how the larva "shuffled off" its skin when changing to a pupa. A curious point which I noticed is that the moth, instead of breaking through the inner covering, and then straight on through the outer, broke through the inner at one end of the cocoon, and then emerged, having traversed the small space left between the inner and outer coverings, at the *opposite* end of the cocoon. I opened them all to see whether they corresponded in structure. So far as I can see there was no obstruction to prevent the insects from continuing their emergence on the same side as that on which they broke the inner covering.—PERCY L. BABINGTON, Walmer House, Tunbridge: *June 7th*, 1896.

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* When at Gibraltar last year I also noticed this peculiar habit of these small flies.—G. C. C.

The late Mr. John Scott's collection of British Rhynchota.—Having just had occasion to refer to the Preface to Mr. Buckton's "Monograph of British *Cicadæ*," I was rather surprised to see the statement that "the late Mr. John Scott's cabinet has been unfortunately scattered." I thought it was generally known, and it is to be regretted that Mr. Buckton did not know, that the British Museum had a first selection from this collection, including all specimens of any importance, and in some instances, such as the *Psyllidæ*, almost his entire series. Besides these, all the types that could be found of his exotic species are also now in our Museum.—CHAS. O. WATERHOUSE, British Museum (Natural History): *June*, 1896.

Reviews.

SOME RECENT AMERICAN PUBLICATIONS.

REVISION OF THE AMERICAN FOSSIL COCKROACHES, WITH DESCRIPTIONS OF NEW FORMS: by SAMUEL HUBBARD SCUDDER. Bulletin of the U. S. Geological Survey, No. 124. 8vo, pp. 176, and 12 plates. Washington: Government Printing Office. 1895.

In this bulky bulletin the author records up to date his knowledge of a subject he has made peculiarly his own. It principally concerns palæozoic forms, and a list of described European species is also given. It is stated that in 1879 only seventeen palæozoic species were known: at the present time the number is 132 species, and additions are constantly being made. A vast number of these are figured. As in all fossil insects a great deal must always remain uncertain, owing to fragmentary condition, &c., and bearing this in mind it seems doubtful policy to describe from, and impose names upon, some of the fragments figured.

THE CRAMBIDÆ OF NORTH AMERICA: by C. H. FERNALD, A.M., PH.D. 8vo, pp. 81, with 3 plain and 6 coloured plates. Massachusetts Agricultural College. 1896.

In this memoir Prof. Fernald has given a substantial addition to the knowledge of North American *Lepidoptera*, and it will be of use to British students also on account of the fact that a not inconsiderable number of our forms occur in North America, and to the more scientific of their body from the three plates of structural details. The coloured figures seem entirely satisfactory, and as for the letter-press it need scarcely be said that it is exhaustive. To the economic entomologist the memoir cannot fail to be useful.

NEW MALLOPHAGA: by VERNON L. KELLOGG; from Contributions to Biology from the Hopkins Seaside Laboratory, iv, reprinted from the Proc. Calif. Acad. Nat. Sci., ser. 2, vol. vi. 8vo, pp. 168, with 14 plates. Leland Stanford Jr. University, Palo Alto., Cal. 1896.

As in many other American publications there is a great deal more in this important memoir than is indicated in the title. Although detailing specially, and describing, the species found on maritime birds in the Bay of Monterey, it is really a capital introduction to the study of the group as a whole in a condensed form, the first 79 pages being devoted to such an introduction and the necessary information as to mounting and preserving. Without committing himself to any positive statement of opinion, the author adopts the latest idea in classification, that of considering the *Mallophaga* a distinct Order, and he subdivides it into the sub-Orders *Ischnocera* and *Amblycera*, according to the structure of the antennæ and labial palpi. The descriptions are full, and the plates excellent.

Nineteenth Report of the State Entomologist on the Noxious and Beneficial Insects of the State of Illinois: Eighth Report of S. A. Forbes, for the years 1893 and 1894. 8vo, pp. 206, and 13 plates, with Appendix of 65 pp. Springfield, Ill. 1896.

The greater part of Prof. Forbes' Report is occupied by an elaborate account of experiments on the action of fungoid parasites on noxious insects in general, and on the "Chinch Bug" in particular; this is followed by a short chapter on the White Ant (*Termes flavipes*) and its ravages in Illinois. To English readers the Appendix, by W. G. Johnson, A.M., on the Mediterranean Flour Moth (*Ephestia Kühniella*) will probably be more interesting. It embodies a circumstantial and chronological account of the records of the insect and its ravages since its first discovery in Canada in 1889, and its rapid dispersion over the States. Not the least useful feature is the List of 79 references to published accounts dating from Zeller's original description in 1879.

The Scorpion Flies: by E. P. Felt, D.Sc.; from the 10th Report of the New York State Entomologist for 1894 (1896). 8vo, pp. 17, with 2 plates.

Original observations on the metamorphoses of *Panorpa* and *Bittacus* are not numerous, and little has been done since Brauer published his remarkable discoveries in 1873 In both genera Dr. Felt has succeeded in rearing the insects in America, and his accounts confirm and amplify the earlier records. There are also observations on the perfect insects. The author says he has not been able to satisfy himself as to the predaceous nature of the imago of *Panorpa*, though it is abundantly evident in *Bittacus*.

Obituary.

Edward Armitage, R.A., F.E.S., born in London May 20th, 1817, died at Tunbridge Wells May 24th, 1896. In none of the numerous notices of this distinguished artist and late Royal Academician, has any allusion been made to his entomological proclivities. We are not aware that he ever showed these by publishing anything on the subject; but it was well known to many that he possessed a considerable collection of exotic *Coleoptera*, and moreover, he was one of the oldest Fellows of the Entomological Society of London, his election dating forty years ago, and as he was not a "Life Member," but continued his annual subscription to the last, it is evident he never lost interest either in the subject or the Society.

Peter Inchbald, F.L.S., F.E.S.—We regret to announce the death at Hornsea, on June 13th, of this well-known Yorkshire naturalist, in his 82nd year. As we shall probably have occasion to give a more extended notice of him in an early number, it must suffice to say here that, although he published little, a genuine field naturalist has passed away; one who from his former educational duties did much to instil a love for Natural History into such of quite two generations that came under his care. He did not join the Entomological Society until 1880, but it is probable that two of its oldest Members—Messrs. Dunning and Beaumont—were amongst his pupils in a sense other than purely scholastic.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *May 18th*, 1896.—Mr. P. W. ABBOTT, Vice-President, in the Chair.

Mr. R. C. Bradley showed a few ichneumons, *Anomalon bellicosum*, from the New Forest, and a pair of *Banchus pictus* from Colwich. Mr. P. W. Abbott, a number of insects taken on the sallows at Wyre Forest last Easter; he said that moths were more numerous on the sallows than he had ever seen them before; *Tæniocampa miniosa* and *Oporina croceago* were both common, and all the usual species were abundant; he also had three *Tæniocampa opima*, not hitherto recorded locally, and *Lobophora lobulata* had also been attracted. Mr. Wainwright, a boxful of Aculeates, including amongst others *Nomada bifida* from Colwich last June. Mr. Martineau said that *Andrenidæ* seemed to have been more abundant this spring wherever he had been than he had ever observed them before. Mr. J. W. Smallwood, a series of *Amphydasis betularia* bred from a pair, one black and one normal (sexes not recorded); in the series were eight females of which six were black, and seven males of which one only was black. Mr. Wainwright said that all the black ones he had ever taken or bred were females, and he had always thought that the black form was associated chiefly with that sex, and was originally a variety of that sex alone. Mr. H. Foster Newey said that he had bred a series from a black pair, and every one came out black, males and females alike. Mr. P. W. Abbott asked for the experience of Members with regard to *Tephrosia crepuscularia*; he had been taking them with light and dark ones intermingled, and also others that seemed intermediate, being dark, splashed with lighter colour; he thought them to be all belonging to the same species.—COLBRAN J. WAINWRIGHT, *Hon. Secretary*.

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—A Meeting of the Society was held at the rooms of the Hon. Librarian on May 15th, the President in the Chair.

Mr. Rickard exhibited a case of beetles collected by himself at the Cape, including the rare genus *Ischnostoma*. Mr. Fleet exhibited specimens found at Cambridge of the larvæ of the new British moth, *Plusia moneta*; the young larva is very different in form and habit from the adult, and lives in a bunch of terminal leaves of monkshood, fastened together. The President remarked on a work just published in Germany by Dr. Standfuss: this gentleman has made experiments in crossing species and varieties of *Lepidoptera*, and some of his results are certainly of interest. Among other results he finds that hybridization between closely allied species produces a remarkable amount of hermaphroditic progeny. He also exhibited one of the basket-worms discussed at the last meeting; the specimen was extracted from its basket and showed great differences when compared with ordinary caterpillars. He also showed another very exceptional larva from Madagascar which he believed to be one of the "slug worms" of N. American naturalists. He then read a paper upon "The Destruction of Forests and its results." He said that much wanton destruction of natural conditions occurs in all parts of the world, which in the long run impoverishes humanity. In connection with this the

Californian Academy of Sciences has recently drawn up a report for presentation to the Congress of the United States protesting against such reduction of forest preserves, "it being a trespass of an inheritance which should, by every legitimate means, be preserved by this generation for those who are to come after. It has been conclusively proven that the terrible droughts, floods and famines in Southern Russia are directly caused by the destruction of timber. It is also a well established fact that the droughts and failures of crops in a large area of France are due to change in climate caused by the destruction of forests since the Revolution." In Britain this does not interest us so immediately, as we have a sufficient and moderate rainfall without forests, but in our Colonies it is not so. He had information that much unnecessary destruction occurred, and that in New Zealand much loss had recently been caused by drought. The preservation and management of forests ought to be considered one of the most important duties of colonial governments. From a naturalist's point of view it was sad to think that this destruction of forests involved the extermination of many of the animals of the world, without our having acquired any knowledge about them, and in many cases without our having even seen them. It appeared from another report made by the Californian Academy of Sciences that the only remaining herd of N. American Buffaloes in the Yellowstone Park had been wantonly destroyed by hunters and sportsmen, as had also the only colony of Beavers in the same district.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *May* 14*th*, 1896.—R. SOUTH, Esq., F.E.S., President, in the Chair.

Mr. Enock exhibited specimens of two very rare aquatic *Hymenoptera*, *Prestwichia aquatica*, which uses its legs in swimming and which has not been recorded since its first capture in 1865, and *Caraphractus cinctus* = *Polynema natans*, which uses its wings in swimming. Mr. R. Adkin, a bred series of *Melanippe hastata*, from Sutherland, with series of the same from Sussex and Co. Cork. The larvæ of the first were fed on *Myrica gale*. The Cork series had a pale ochreous tone, instead of the usual dead white ground. The southern series were very uniform, whereas the northern examples varied considerably in the black markings. Mr. Barrett, a series of *Abraxas ulmata* and *Pieris rapæ*, v. *cruciferarum*, from Japan. The former were of the British type, but the latter equalled *P. brassicæ* is size, had a considerable suffusion of black from the base and in some of the females a partial fusion of the spots. In the discussion which ensued it was suggested that it might be the result of abundance of succulent food. Mr. Carrington remarked on the hardy constitution of the species in Canada, where it experienced extremes of temperature from—60° to 138°. Mr. Tutt noted the oscillation in abundance and rarity of *P. rapæ* in America, where it had survived after a great struggle with a closely allied indigenous species, with which it was supposed to have interbred, and which was now very rare. Mr. Tutt, for Mr. Merrifield, a number of specimens bred under various degrees of heat and cold: *Aglais urticæ*, *Pyrameis Atalanta*, *Euvanessa Antiopa* and *Gonepteryx rhamni*. He described the variations in detail and remarked that it was mainly the upper-sides which had been affected, whereas the under-sides, which in the *Rhopalocera* were developed for protection, were but slightly influenced. *T. orbona* and these species were not parallel cases of variation, as in the former (var. *Curtisii*) it was the upper-side that was protectively coloured. Mr. Tutt read a paper, entitled, "Is cold the cause of Melanism in Scotch specimens of *Tryphæna orbona?*" in which he showed by magazine references that the area of distribution of var. *Curtisii* was by no means the coldest portions of the country, and that there the sallows flowered quite as early as in the S. of England. He was of opinion that the variation was wholly brought about by utility, that the species was protectively coloured. In the subsequent discussion several members considered that the dark variation in this species was a return to an ancestral form, and that every evidence showed that the processes of evolution were still in progress.—HY. J. TURNER, *Hon. Secretary.*

N.B.—In last report, *delete*, "The extreme colour . . . . on this point," and *insert*, "He considered that the evidence pointed to cold being one of the chief factors in the darkening of the species in its northern localities." *Add at the end*: "In his reply Mr. Adkin thought that although the extreme colour of var. *Curtisii* may have been developed for protection, much further observation was necessary before it could be proved.

ENTOMOLOGICAL SOCIETY OF LONDON: *June 3rd*, 1896.—Dr. D. SHARP, F.R.S., Vice-President, in the Chair.

Mr. Gervase F. Mathew exhibited the new species of *Leucania*, *L. favicolor*, recently described by Mr. Barrett (Ent. Mo. Mag., 2nd series, vol. vii, p. 99), and also the varieties of *L. pallens* noticed by Mr. Barrett in the same article (*l. c.*, p. 100). He also exhibited a remarkable variety of *Mamestra abjecta*, which bore a close resemblance to *Apamea gemina*, var. *remissa*, and to *Hadena genistæ*, and a bred specimen of *Eupithecia castigata* (?), with nearly the whole surface of the wings (the margins excepted) denuded of scales. Mr. Elwes exhibited a collection of butterflies taken in the neighbourhood of Gibraltar during last April, and said that he had found the district very unproductive, owing to the great drought. Mr. J. J. Walker remarked that Mr. Elwes had been very unfortunate, as during three spring seasons his experience had been very different; at the same time it seemed to be agreed that Spain, as a whole, was not so rich in *Lepidoptera* as in other Orders of insects. Dr. Sharp exhibited on behalf of Mr. Hampson specimens of the female of *Oiketicus Crameri*, recently sent by Mr. Dudgeon from Sikkim. The females in this species are so maggot-like that it is difficult to recognise them as perfect moths. There were also two pupa shells, one of which was used as a receptacle for eggs, and in the other eggs had hatched, so that it had the appearance of a pupa filled with young larvæ. Mr. R. W. Lloyd exhibited a specimen of *Athous hæmorrhoidalis*, from Savernake Forest, Wilts., with a curious malformation of the right antenna. Mr. Waterhouse exhibited several branches of oaks from the New Forest entirely denuded of foliage, and stated that throughout large tracts of the Forest the oaks had been stripped of their leaves in the same fashion by Lepidopterous larvæ, especially *Cheimatobia brumata*, *Hybernia defoliaria*, and *Tortrix viridana*. Certain trees, however, though situated among the denuded trees, had quite escaped. Dr. Sharp suggested that they belonged to a different species; but Mr. Waterhouse said that he had carefully examined them, and that this was not the case. Mr. McLachlan said that the immunity of the trees referred to was probably due to irregularity in coming into leaf. The discussion was continued by Mr. Elwes, Mr. Champion, Mr. Jacoby, and others. Mr. Tutt exhibited living pupæ of *Enodia hyperanthus* and *Epinephele Janira*, and pointed out how different the pupæ of these two species were in general appearance, structure, and cremastral attachment, from each other. He pointed out that these two species had for a long time been erroneously placed in the same genus, but that, in all stages, they were widely separated, and that not only should they be placed in different genera, but that they appeared to belong to different tribes—*Enodia hyperanthus* being in the *Cœnonymphidi* and *Epinephele Janira* in the *Epinephelidi* (*vide* Entom. Record, vii, p. 301). He also exhibited living pupæ of *Thecla pruni* which had been sent to him by Mr. H. Mousley. He called attention to the great resemblance that the pupa bore, in its dorsal aspect, to a bird's dropping. Black in ground colour, the two whitish prothoracic patches and the similarly coloured metathoracic patch which extended transversely across the constricted waist, give it a resemblance that cannot be misunderstood. Mr. Blandford exhibited live specimens of *Callidium variabile*, L., bred from the bark of beech timber from Blenheim Park. Mr. A. J. Chitty exhibited two specimens of *Osphya bipunctata*, F., taken by Mr. J. J. Walker and himself at Chattenden Roughs, and two specimens of *Psylliodes cyanoptera*, Ill., from Wicken. Canon Fowler exhibited specimens of *Xyletinus ater*, Panz., taken by Dr. Chapman in Herefordshire; this was the first time this beetle had been recorded from this or the neighbouring counties. Mr. Blandford exhibited and described series of Tropical American butterflies from the Godman-Salvin collection, arranged to show the existence and geographical distribution of homœochromatic groups. Mr. Elwes characterized the exhibit as the most interesting that had been before the Society for many years, and hoped that the series would not be broken up, as was intended, until an opportunity had been found for full discussion of the various questions raised. The latter point was also urged by Dr. Sharp and Col. Swinhoe, and at the conclusion of the Meeting Mr. Blandford announced that Mr. Salvin had kindly consented that the series should be kept intact in order that it might form the subject of a special discussion later in the year, and that he himself would defer the publication of his remarks in view of the anticipated re-opening of the matter. Mr. Tutt having carefully examined the specimens of *Leucania favicolor*, said that he considered it as highly probable that it was a remarkable form of *Leucania pallens*, but that more material was required before a final opinion could be formed. The remarkable transverse (elbowed) line of dots crossing the fore-wings was exactly parallel with that of *Leucania straminea* and *L. impura* ab. *punctalinea*, and for an aberration of this character to occur in *L. pallens* was as probable as in *L. impura*, the typical form of which is but sparingly dotted in the direction of the elbowed line. The hind-wings showed almost identical characters in the dark shading, traces of dots in nervures, &c., as the red-aberrations of *L. pallens* exhibited by Mr Mathew. He considered that until the matter of its specific distinctness was finally settled, Mr. Barrett had erred on the right side in giving it a distinctive name, even if the name subsequently fell as an aberration of *L. pallens*. Dr. Chapman communicated a paper " On the Phylogeny and Evolution of the *Lepidoptera* from a pupal and oval standpoint."—W. W. Fowler, *Hon. Sec.*

THE GYPSY MOTH IN ENGLAND.*

BY PROF. C. H. FERNALD, A.M., PH.D., F.E.S.

The earliest information that I have found of the presence of the gypsy moth in England, is given by Wilkes, in his work, entitled, "Twelve New Designs of English Butterflies," published in London in 1741-42, with twelve plates, but without text. Plate X, Fig. 2, represents the insect under the name "The Gipsey Moth."

Harris described it in his "Aurelian's Pocket Companion," published in 1775. Donovan, in his "Natural History of British Insects," Vol. V, published in 1796, figures this insect on Plate CLXIII, and describes it on pages 67–69, calling it the "Gipsey Moth." In his account he says: "That the *Phalena Dispar* was not uncommonly scarce about fifteen years ago, is evident from this circumstance, few collections of British insects that were in the hands of eminent collectors are without an English specimen, which was procured about that time." From his further account we infer that he considered it a rare insect in England. Haworth, in his "Lepidoptera Britannica," page 88, published in 1803, calls it *Bombyx disparus*, and for a common name "The Gipsy," and says it is very rare. Salisbury, in his "Hints to Proprietors of Orchards," published in London in 1816, gives the fullest and most complete account of the gypsy moth that I have seen in England up to that date. He states that this caterpillar is common in gardens and woods, where it does considerable damage.

Stephens, in Vol. II, page 56, "Illustrations of British Entomology," Haustellata, 1829, says it is not common near London, but appears to abound in the fens of Huntingdonshire. He also refers to the statement that it was introduced into Britain by eggs imported by Mr. Collinson, but says that the abundance with which it occurs near Whittlesea, and the dissimilarity of the indigenous specimens (which are invariably paler, with stronger markings) to the foreign, sufficiently refute the opinion.

Curtis, in his "British Entomology," Vol. XVI, 1839, alludes to the scarcity of this species in the time of Donovan, and speaks of finding them in considerable numbers, when a boy, in the marshes at Horning, in Norfolk. Mr. Stainton, in his "Manual of Butterflies and Moths," Vol. I, page 130, 1857, says, "It is found plentifully in fenny districts, but is not generally common." George Kearley, in the "Entomologist's Weekly Intelligencer," Vol. IV, page 192, 1858, speaks of the gradual disappearance of the gypsy moth in England, and states that it was claimed by some to have actually become extinct in that country. Mr. Richard South, in the "Entomologist," Vol. XXV, page 259, 1892, states that entomologists in 1870 seem to have been a little troubled about the right of the gypsy moth to be considered a British insect, referring, of course, to those caterpillars or imagoes which were then found at large. He further says, after speaking of specimens having been found from time to time, that there is no reasonable doubt that this species is extinct in England; "that somewhere about the fourth decade of this century, the species began to decrease in numbers, and that toward the end of the fifties it had practically ceased to exist as a wildling in this country."

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* Extracted from the Massachusetts Official Report, pp. 268–273.

Numerous attempts have been made to introduce this insect into England again, but they do not appear to have been successful. Many entomologists have bred it in confinement, continuing until it can now be regarded only as a semi-domesticated species in England; and complete degeneration of the stock, by the process known as "in-and-in breeding," is possibly averted by the periodical introduction of eggs from the Continent.

The late Mr. J. Jenner Weir, in a letter to "Insect Life," Vol. IV, page 138, 1891, said that the gypsy moth had been unintentionally exterminated in England, and further writes, "I think the gypsy moth must have been destroyed simply by collectors." Mr. C. G. Barrett, in his "Lepidoptera of the British Islands," Vol. II, page 303, 1894, gives a very good history of the occurrence of this moth in England and of its probable disappearance, but without assigning any cause for such disappearance.

Mr. C. Nicholson read a paper on the life-history of the gypsy moth, before the City of London Entomological and Natural History Society, Sept. 18, 1894, in which he proposed for discussion, among others, the question why this insect had become extinct in England. Mr. J. W. Tutt gave it as his opinion that it was because the insect was not a native. "Its whole history proves it to be an imported species, even when it first became known. Thousands of specimens in all stages had been set loose in various parts of the country, but, with the exception of an odd specimen here and there, no specimens were taken wild. Its abundance in the fens for a year or two simply pointed to the care with which it was put out, and to the temporary existence of favourable conditions. There are thousands of acres of land, to all intents and purposes fitted for its establishment here, but it — possibly the agriculturists would say fortunately — will not establish itself."

The history of the gypsy moth in the United States does not seem to lend force to the view taken by Mr. Tutt, as much as we wish it might prove true, for it seems to thrive as well here as in any part of the old world. America is indebted to Europe for a long list of insect pests, many of which are far more injurious, because of their unrestricted increase, than in their native country; notable among these are the currant saw-fly (*Nematus ribesii*), the larch saw-fly (*Nematus Erichsonii*), the cabbage butterfly (*Pieris rapæ*), the Buffalo carpet-beetle (*Anthrenus scrophulariæ*), and many others, none of which show any indications of a decline in a foreign country. The idea of Mr. Weir, that they were destroyed in England by collectors, hardly seems worthy of consideration. I will not attempt to express an opinion as to the cause of their extinction in that country, but it seems to me that it must be due to causes not yet understood; and if the profound thinkers in entomological matters, of whom England has so many, have not satisfactorily settled this question, it would be folly for me to express any decided opinion on the subject. I wish, however, to call attention to one or two points. Great Britain, because of its insular position, the prevailing winds and currents in the surrounding ocean, has a far different climate from that of Massachusetts or the interior of Europe and other parts of the old world, where this insect is usually most abundant. I noticed, when in England, that the foliage of all vegetation seemed darker than in this country, or, at least, than in the eastern part of it; and it occurred to me that this might be due, in part, to the larger amount of moisture in the atmosphere, especially as quite similar conditions of climate, with darker foliage occur in British Columbia, as I have been informed by my colleague, Mr. E. H. Forbush, who also states that the arboreal animals of that region are much darker than those in the eastern parts of the United States. Some years ago, while in England, my kind friend, Mr. C. G. Barrett, gave me a very complete series of British Tortricids, and I never look at my collection without noticing how much darker these insects are than the same species from Germany and other parts of Europe. It seems to me that this darkening may have resulted from natural causes, operating through a very long period of years. When these insects first made their way into the British forests and fens, with their darker surroundings, the lighter coloured individuals, contrasting the most with the objects on which they rested, naturally fell a prey to their enemies more readily than the dark-coloured individuals; the darker ones were left to propagate the species, and, in time, a dark race was formed. I am well aware that I am now trespassing on ground which is far better understood by my English brethren, but I trust that I may be permitted to call attention to this matter for the purpose of considering the bearing of environment and climate on the gypsy moth.

If we suppose that the native home of this insect was in central Europe or south-western Asia, and that it was developed from some progenitor in which the sexes were of the same colour, possibly not very unlike the males of the present time, we may well suppose that, as the females developed a larger number of eggs, rendering them so heavy that they flew but rarely, and, in time, not at all, their wings, not being used, would grow weaker and less useful as organs of flight, as we now find them. Under these circumstances, suppose them to be inhabiting trees and shrubs, the bark of which is of light colour, as birch, their enemies, the birds, etc., could readily distinguish these strongly contrasting females on the trunks of the trees and destroy the darker forms, leaving the lighter examples to propagate the species; and, as this went on, in time permanently light-coloured females would be produced.

The males fly actively during the day, and are captured, while on the wing, by insectivorous birds; but in this case slight variations in colour would not be apparent to the birds, and no discrimination would be made in favour of such variations. For this reason the males have probably retained more of their primitive colour and appearance, while the females have made a most remarkable change; and, as a result, this insect furnishes a most striking illustration of what is called sexual dimorphism.

Another reason for thinking that the males have changed less than the females, and that the changes made were perhaps in a different direction, is the fact that they more nearly resemble the males of allied species than they do the females of their own. Compare Figs. 3 and 4, on Plate I, with Figs. 11, 14 and 17, on Plate 39, and also with Figs. 1 and 2, on Plate I. The three species of *Orgyia* just referred to have wingless females (one of which, *O. leucostigma*, is represented on Plate 39, Fig. 18), which are so heavy that it would be impossible for them to fly with wings of ordinary size. It is probable, however, that the remote ancestors of these insects were winged in both sexes, and that, as the female developed a larger reproductive system and more eggs, she became too heavy for flight, and at last abandoned all attempts, just as the gypsy moth is now doing, and that by disuse these organs became atrophied, and nothing now remains but mere rudiments of the wings. A similar fate possibly awaits the gypsy moth. Two of the species of *Orgyia*, figured on Plate 39, Figs. 14 and 17, are so-called natives of this country; while the other, Fig. 11, is a native of Europe, and has been in this country probably a comparatively short time, not long enough, at any rate, for the new environment to produce any noticeable change. Since the introduction of *O. definita* (Fig. 14) and *O. leucostigma* into this country, whenever and in whatever way that may have happened, the three species have been in an environment which has produced marked changes in the males, while the wingless females have probably changed far less. The two American species have changed so little from each other that *O. definita*, for a long time, was not recognised as a distinct species. It may have branched off from the stem of *leucostigma* at a comparatively recent date.

If, in comparatively recent times, the gypsy moth made its way into England, by the help of man or otherwise, may not the darker colour of the foliage and other surroundings have rendered the female moths more conspicuous objects to their enemies, so that, "in the struggle for existence," this species was exterminated before it had time to take on the darker colours, as may have been the case with the British Tortricids? It may be thought that the warm, damp climate of England would favour fungoid plants which are destructive to insect life; but, if this caused the extermination of the gypsy moth in England, why has it not also caused the extermination of numerous other species with more or less similar larval habits? If any of the above conditions caused the extinction of this moth in England, we have little to hope for in America, since so very little of our territory has any such climatic conditions as England.

ON THE HABITS OF *APHOMIA SOCIELLA*.

BY F. W. L. SLADEN (WITH NOTES BY C. G. BARRETT, F.E.S.).

I have had a good deal of trouble in my humble bees' nests with this moth. In 1893 it got access to some nests which I kept for observation in the walls of an outhouse, and in the following year, I having failed to destroy all the cocoons in the winter, an enormous brood was produced, destroying all the nests I had there. It will attack the nests of all the *Bombi*, but it is singular that it never thrives in those of one of the commonest species in this neighbourhood, *B. lapidarius*. Of the other species, those which live on the surface of the ground are preferred, no doubt because their nests are more easily discovered than those in holes.

The nests are attacked between the middle of June and August, and the moth searches for them at night. When young the larvæ of the moth do not greatly damage the comb, especially if they are not numerous or if the colony of bees is a strong one. When the droppings, old cells, &c., have all been devoured, they will attack the bee-brood until the entire nest is riddled with their silk lined tunnels, and nothing is left but fragments of cocoons and nest material strung together with tough web. I have frequently taken nests of *Bombus Derhamellus* in this state containing two or three workers and the old queen, which had fallen into a drowsy state and seemed quite incapable of helping themselves. The mature larva is from about one inch to one and a quarter in length. It is of a pale olive-green colour; the skin is tough and leather like, and is very sparingly clothed with short hairs. It is very active, wriggling backwards as well as forwards with great agility when disturbed.

In August or September the larvæ spin their long tough cocoons, not changing to pupæ until the following June. At the end of that month the moth usually emerges and searches for a fresh nest in which to lay its eggs. When the nest is below the surface of the ground the larvæ often spin a web to the mouth of the hole, and climbing up by this spin their cocoons on the surface of the ground. A cluster of cocoons, the size of a cricket ball, does not seem to be so very large, taking into consideration the size of the nest. The comb of *Bombus terrestris* is often seven or eight inches in diameter; it would almost supply food for a mass of larvæ as large as a football! I am sending you a cluster of cocoons spun in a heap of straw close to the mouth of a hole of a nest of *Bombus hortorum*, which was about eighteen inches from the surface. It is about one-fourth of the cluster that I found outside the nest, and there was a number of cocoons inside as well.

Dover: *January*, 1896.

[A paper (Ent. Mo. Mag., vol. xxxi, p. 72) upon the curious mass of cocoons formed by larvæ of *Aphomia sociella*, with further remarks upon the food by Dr. Chapman (Ent. Mo. Mag., vol. xxxi, p. 96) brought me a note from Mr. W. H. B. Fletcher recommending that I should apply to Mr. F. W. L. Sladen, of Dover, for information respecting his experience of this species while rearing wild bees. Mr. Sladen's response, given above, was of much interest.

The cluster of cocoons which is before me is of the size of a tennis ball. For the last ten days the moths have been emerging daily, sometimes in dozens; considerably over a hundred must have emerged already, and till two or three days ago scarcely a single female appeared—now the majority are of that sex. The males are excessively active and eager to escape, and run over and spoil each other very quickly, so that to obtain really perfect examples it is almost necessary to watch as they emerge and allow each to dry its wings alone. When quite perfect the moth, in both sexes, is very beautiful, the apical half of the fore-wings in the male, and the same portion, with the basal and costal areas, in the female, being clothed with rich dark green scales overlying the browner scales. When the moth begins to run about or to fly these green scales become detached and shake off, leaving the ground-colour as usually observed—pinkish-white in the males, reddish-brown in the females, and this partial denudation does not commence, like any usual process of wearing, from the hind margin, but the green scales near the middle of the wing are first shaken off, and thence gradually to the hind margin.

It may be well to point out that the interesting information above, furnished by Mr. Sladen, fully explains what to me appeared to be a serious difficulty (Ent. Mo. Mag., vol. xxxi, p. 73) when under the impression that the larvæ had fed in wasps' nests.—C. G. Barrett, *June* 16*th*, 1896].

THE GENERIC TERM *NEURONIA* AS APPLIED IN *TRICHOPTERA* AND *LEPIDOPTERA*.

BY ROBERT McLACHLAN, F.R.S., &c.

The latest authorities here and in America persist in following many previous writers on *Lepidoptera* by maintaining the generic term *Neuronia* for the moth originally described by Fabricius as *Bombyx popularis.* According to my views this is an error. It probably arose with Agassiz, who, in his "Index" (copied by Scudder and other successors in the art of cataloguing names), has a generic term *Neuronia*, Hübner, 1816 (*Lepidoptera*), and a generic term *Neuronia*, Leach, Steph., 1837 (*Neuroptera*). The Neuropterous (or Trichopterous) name originated with Leach in his article, "Entomology," in Brewster's Edinburgh Encyclopædia, vol. ix, p. 136, and was published in 1815; it is still in use in the sense in which it was intended. Hübner's *Neuronia* was published in the "Verzeichniss," 215, 6. The title-page of this work bears the date "1816;" Mr. J. Hartley Durrant, who has worked out the dates of publication from internal evidence, assures me that the portion of it containing the name in question certainly did not appear until after 1822 and before 1826. But even the date 1816 would suffice to give priority to Leach's term. Therefore, the Lepidopterists should substitute or invent another generic name for the familiar moth-genus.

Lewisham, London:
January 25*th*, 1896.

ON THE PROBABLE EXTINCTION OF *LYCÆNA ARION* IN GLOUCESTERSHIRE.

BY H. W. MARSDEN.

In the twenty-first volume of the Ent. Mo. Mag. four articles appeared on "The probable extinction of *Lycæna Arion* in England," communicated by Messrs. Bignell, Goss, South and myself, the second and fourth having special reference to its Gloucestershire habitats. These papers being now twelve years old, some later notes will be of interest.

In my article (Ent. Mo. Mag., January, 1885) I gave a tolerably clear history of what I personally knew of the species from 1866 to 1884, the narrative ending in a gloomy enough fashion, and from then until now little has come to my knowledge to brighten the prospect.

During the seasons 1884 to 1889 I heard of hardly any specimens being either seen or caught, and as I have continued in close contact with the Gloucester collectors (mostly amateurs), my information cannot be far wrong.

In 1889 my son was on a visit to the county and caught about a dozen, and I heard from other sources of its being more common that year. He did not then tell me exactly where he got his, and I was under the impression that it was somewhere within the district described by Mr. Goss (Ent. Mo. Mag., October, 1884), this, however, was a mistake.

From 1889 to 1895 I heard of none, or almost none, in Gloucestershire, but last season my son, being home from Egypt, took about a score on the 16th and 17th of June. As they were already getting worn he pinned only about half of those he netted, so that in the two days about forty were probably seen by him.

This year he had occasion to visit England again, but earlier in the year. Being in Oxfordshire at the end of May, he visited the ground on his way to Bristol during the first days of June. He could only stay one day, Wednesday, June 3rd, and then found *L. Arion* more common than last year; but even at this early date some specimens were worn; thus it must have been out before the end of May! Even considering the very warm weather we had then, this is surely an abnormally early appearance. On his return, I for the first time learned the locality, and found it was one quite unknown to me (so far as *L. Arion* is concerned), and a considerable distance from the habitats formerly known to me, so I decided to visit the place myself. Before doing this, however, I wished to beat up the old localities, but the weather breaking I could not do this as soon as desirable.

In the Ent. Mo. Mag., xxi, p. 188, I refer to "two or three other localities in the district." The one best known to me was Dursley, where in 1866, 7 and 8, I found *L. Arion* fairly common, but confined to a most restricted area. For years, however, I have not been there, and so far as I know a net has not been seen there since. On Saturday, June 6th, my son and I spent the greater part of the day in the Dursley district and remained some two hours on the old "*Arion*" ground, but saw no sign of it. *L. Alsus* was swarming as of old, and there were a few *L. Adonis* and plenty of *L. Icarus*, most of them rather worn. The vegetation on the "*Arion*" area has a good deal changed in a manner described hereafter.

I could not get to the Stroud, &c., district until June 11th. As my sight is now so defective I took a reliable friend with me in order to make as sure as possible of not overlooking the species. We reached the "Stroud End" about one o'clock and spent nearly three hours carefully working all the best known localities. To me these are so clear and defined that, blind as I am, I could hardly miss seeing a "large blue" were it there; my friend is keen sighted, twenty years younger than myself, sharp and active and an ardent entomologist. However, our search was fruitless. In a very few spots the wild thyme was plentiful, but the general character of the vegetation has greatly changed from what it was 10 or 15 years ago: where a fine thin turf with broad patches of thyme then abounded, now there is a strong growth of heavy pasture grasses with hardly a sprig of thyme to be seen, much as Mr. Bignell described Bolt Head in 1884.

After satisfying ourselves that it was in vain to seek *L. Arion* here, we proceeded to the locality discovered by my son in 1889. Whether this lies N. S. E. or W. I do not say for obvious reasons, but we did not reach it until evening was closing.

Next morning we visited the place again but found the butterfly rare and practically the species was over. My friend netted two, and being thus assured we were on the right spot I left him and took a new departure in order to investigate the remainder of the old known grounds.

The result of my friend's work may as well be stated first. He saw some twelve or fifteen of which he only pinned six, turning the others captured loose again.

I returned some distance, and for the love of old times visited the spot where, thirty years before (save five days), I first saw *L. Arion* alive. This is an open space at the bottom of a small valley. None were visible there, so I went upwards through the woods, and some three to four hundred yards off, in another opening, saw the species alive again. Further up were more clearings, and hovering over a fine patch of thyme in one of these I found a second *L. Arion*, which I netted, a pretty good specimen and the only one I have pinned for sixteen or seventeen years. However, I was satisfied; my first (entomological) love is not dead yet, precarious as her future existence may be. From here I worked on to the other old "Head Quarters" (Ent. Mo. Mag., xxi, p. 117). I expect few people know the glades and openings of these woods better than myself, and I "zigzagged" all through them and over all the old localities. A few worn *L. Icarus*, an occasional skipper and a few common moths cropped up, but of *L. Arion* no trace whatever. Of course *C. pamphilus* was everywhere and an occasional *E. Ægeria*. Here, as at the "Stroud End," the vegetation has changed and in a similar manner, but I may notice that in many places the rock rose was in greater profusion and more flowered than I ever remember to have seen it. After a long and careful search with no result, I retraced my steps, and close to where I took the first I netted a much worn female and immediately released her, so my record for the two days stands one seen, one turned loose and one pinned; my friend's, six pinned and some six or ten others netted and released or seen.

Now a few words on the probable future of *L. Arion.** I fear sadly that its extinction is only a matter of time. From what has been shown (Ent. Mo. Mag., 1884), and later observations, it appears that the species has practically disappeared, from many places where it was formerly, so to say, abundant, and that over the large district noted by Mr. Goss, only a very few linger amongst the wood clearings.

From all the open ground in this district it has apparently totally disappeared, and the same at Dursley. I do not believe that collecting has been so persistently carried on as to have played any appreciable part in the injury done; but that this has arisen from the combined causes of bad seasons and change of vegetation. It might survive the bad seasons, as it must have done on the localities lately discovered, for I can hardly think it would remove its quarters; but if the food-plant is almost entirely destroyed at the same time, there can be no hope of the butterflies continuing their species, and there is no question whatever but that in its earlier stages the larvæ feed on the blossoms of wild thyme.

What the prospect is on the newly discovered locality in this county one can hardly pretend to say. It is greatly to be hoped that this will not be discovered by greedy collectors. At present I believe it is totally unknown except to the three persons named in this article and from whom *L. Arion* has nothing to fear.

40, Triangle, Clifton:
July 14*th*, 1896.

[Is the credit that collectors take to themselves for turning out "worn" examples warranted, as largely helping to continue the species? My own opinion is that pairing takes place very soon after emergence, and that the females, when "worn," have already deposited all, or the greater part of, their ova.—R. McLachlan.]

Hæmonia Curtisi, Lac.—This pretty and curious beetle, a traditional inhabitant of the brackish waters of the Isle of Sheppey, has, until the present year, eluded all my efforts to find it "at home." A specimen casually found about the middle of last month led me to the discovery of its habitat quite close to Sheerness, and by persistent working with the water-net I have succeeded in taking a good series. The ditch in which *Hæmonia* occurs is rather more than brackish; it is, indeed, saline enough for shrimps of the familiar (when boiled) red kind (*Palæmon squilla*) to thrive and attain their full size, and it swarms with *Gammarus* and other Crustaceans, as well as with sticklebacks of portentous dimensions. *Potamogeton pectinatus* grows profusely in the water, and on this plant the *Hæmonia* is found sparingly, but usually in pairs. No doubt the net gathers but a small proportion of those that are actually there, as the power of the beetle for clinging to any substance is something marvellous. It is no easy matter, first to remove it from the inside of the net without leaving one or more of its long wiry legs behind, and next to transfer it safely from one's fingers into the bottle. The *Potamogeton* is now in bloom, but I do not notice, as I believe the Rev. H. S. Gorham did when he took *Hæmonia* rather freely in the Isle of Sheppey some 25 years ago, any special partiality of the insect for the flower. As the locality is within half a mile of my house, I often stroll there for an hour in the evening with my little girl, whose sharp eyes I find very serviceable in detecting the lurking *Hæmonia* among the mass of *débris* and creeping things brought up by the water-net. Four species of *Bagöus—limosus* (*petrosus*, Wat. Cat.), *subcarinatus*, *frit* and *tempestivus*—are to be found in this ditch with *Berosus spinosus* and other beetles which are partial to brackish waters, while *Heterocerus obsoletus* and *Aphodius plagiatus* burrow in its muddy banks. Mr. Champion met with the *Hæmonia* in the same locality in 1886.—James J. Walker, 23, Ranelagh Road, Sheerness: *June* 8*th*, 1896.

Psylliodes cyanoptera, Illig., at Wicken Fen.—My friend Mr. A. J. Chitty has recently been kind enough to give me a specimen of this rare species from Wicken. Four examples were captured by him just off the Fen by the lock adjoining the well-known inn, "Five miles from anywhere, no hurry." Three of them belong to the typical form in which the head and thorax are rufous and the elytra cyaneous. The other has the head and thorax infuscate, and approaches the var. *d* of Weise (Naturg. Ins. Deutschl., vi, p. 806). The insect is closely allied to *P. chrysocephala*, Linn., of which it was considered a variety by Foudras. Weise gives *Sisymbrium sophia* as a food-plant.—G. C. CHAMPION, Horsell, Woking: *June* 30*th*, 1896.

Gnorimus nobilis at Farningham.—On June 13th I beat a fine specimen of this rare insect out of elder blossom on the road from Farningham to Darenth Wood, close to the ruins of the Roman Villa.—R. W. LLOYD, St. Cuthberts, Thurleigh Road, Balham, S.W.: *July*, 1896.

Euryusa laticollis, Heer.—I took an example of this rare Staph. in 1893 at Windsor Park. I believe my specimen, like those recorded by Dr. Power and Mr. Champion, was found in a rotten beech tree.—A. J. CHITTY, 27, Hereford Square, S.W.: *June* 19*th*, 1896.

Malthinus fasciatus, Ol., and balteatus, Suff.—In Canon Fowler's "British *Coleoptera*" (vol. iv, p. 146) the male of *M. fasciatus* is said to have the posterior tibiæ "furnished with a tubercle on the inner side behind middle." No mention is made of this peculiarity in the male of *M. balteatus*, but the latter is said to be very closely allied to *fasciatus*, "of which it has been by some authors considered a variety, or one of the sexes."

I have long doubted the correctness of the statement respecting the presence of this tubercle in the male of what we call *fasciatus*, Ol., and have this year (which has been a remarkably good one for both *Malthinus* and *Malthodes*) taken several pairs of the insect *in cop.* In neither sex is there any trace of a tubercle, but in *M. balteatus* (also taken *in cop.*) I find the male has the tubercle ascribed to *fasciatus*. The posterior legs of *balteatus* ♂, however, are not fuscous, this character applying only to the ♀. The fact of the males of the two species being dissimilar disposes of the question of *balteatus* being a variety or sex of *fasciatus*.

The thorax of *balteatus* is in both sexes narrower than in *fasciatus*. The males may be known by their more triangular head. In all the specimens of *fasciatus* taken *in cop.* the head of the male is red, yellow behind eyes (viewed from the side), this part being black, or nearly so, in the female.—E. A. NEWBERY, 12, Churchill Road, Dartmouth Park, N.W.: *July* 15*th*, 1896.

Cionus scrophulariæ on Buddlea.—Insects are excellent botanists. I found quite a number of *Cionus scrophulariæ*, L., upon a plant of *Buddlea globosa* growing in my garden. The shrub comes, of course, originally from Chili; but I see on looking up its botanical position, it is placed among the figworts (*Scrophulariaceæ*).—W. D. R. DOUGLAS, Orchardton, Castle Douglas, N.B.: *June* 20*th*, 1896.

The original capture of Nebria livida on the Yorkshire coast.—Being a former student in the late Professor Williamson's classes, I was interested on reading his recently published autobiography (Reminiscences of a Yorkshire Naturalist, by the late W. C. Williamson, M.R.C.S., LL.D., F.R.S., Professor of Botany in the Owen's College, Manchester; edited by his Wife), to learn that in his school-days he was an enthusiastic entomologist. He mentions that whilst at school at Thornton he collected insects for the Scarborough Museum, where his father was curator for twenty-seven years. He continued his insect collecting whilst a medical pupil to a surgeon in Scarborough, but after that time medical practice, botany, geology, palæobotany, and microscopic researches occupied his time to the exclusion of any further work of an entomological nature. In chapter II he describes the circumstances attending the first capture of *Nebria livida* on the Yorkshire coast, as follows:—

"During my medical studentship (1832—35), my father and I acquired considerable knowledge of the birds and insects of eastern Yorkshire. In the latter branch of study we had made one fortunate discovery. We had early collected a single specimen of a beetle unknown to us, and were unable to learn the name until we found in Curtis' 'British Entomology' a figure and description of our insect. It proved to be *Nebria livida.* The writer stated that an extremely small number —I think three or four isolated examples—had been collected on the Lincolnshire coast. We wholly failed to recollect where we had obtained our single specimen. Long afterwards, we were working amongst the rocks of Cornbrash, which, fallen from a higher part of the precipitous cliff, were then strewn in considerable numbers over the sandy shore of the south-eastern corner of the north bay of Scarborough. Turning over one of these blocks, my eye quickly detected a *Nebria* running out of the depressed sand upon which the stone had rested. Securing my prize, I quickly joined my father, and showed him my captured treasure. We then remembered that this was the place where we had obtained our original specimen. It was long before other localities were discovered from which the insect could be obtained in any numbers; and since it re-appeared at ours every summer, until the bridge and embankment ruined the spot, we were able to supply the needs of our entomological friends."—J. Harold Bailey, 128, Broad Street, Pendleton: *June*, 1896.

"'Sembling" of Athous niger.—On the 11th inst. in the hot sunshine at mid-day my attention was attracted to a number of large black insects flying about a pæony, and on going close to it I saw about a dozen of this beetle in a state of great excitement alternately taking short flights and settling on the upper leaves, there making brief runs and then rising again on their wings. After watching them for a few minutes I was called away, and left them in full enjoyment of their exercise, concluding that it was an ante-nuptial assembly, such as is usual among certain *Lepidoptera*, though I had no actual proof thereof. At any rate, such a scene has never before come within my experience in *Coleoptera*, but my opportunities of observation of insect life at hot high noon having been always very restricted, there may be another explanation. I went away saying to myself *C'est toujours l'amour*; when after a short interval I returned, sunshine and solitude reigned supreme.—J. W. Douglas: *June 14th*, 1896.

Dytiscus dimidiatus near London: a correction.—The insect referred to in my note in the May Ent. Mo. Mag. (*ante*, p. 112) proves to be an interesting variety of *Dytiscus marginalis*, apparently undescribed, having the basal and apical margins of the thorax concolorous with the disc. One of the coxal plates is rounded (accidentally?), and this, with the colour of the thorax, led to my mistake.—E. A. NEWBERY, 12, Churchill Road, N.W.: *June* 13*th*, 1896.

Agrion mercuriale, Chp., in the New Forest.—I have more than once recorded how, in June, 1868, I took *A. mercuriale* rather commonly in the New Forest, and that I had never since been able to find it. As I know of no other locality for it in this country, fears as to its extinction existed. Yesterday, however, in company with Dr. Sharp, I visited the old locality (or somewhere near it), and we secured six males; this morning, in indifferent weather, I went alone, and found two more; altogether less than a dozen were *seen*, and it is excessively local, occurring only for about 200 yards along a drainage ditch; other parts of the same ditch produced nothing but the very common *A. puella*. This ditch lies at the back of the New Park enclosure, and is crossed by a footbridge in the drive leading from the Lyndhurst (or Brocklehurst) road to Bank. As the ditch is only one of several others of a similar nature that exist in the Forest, it is reasonable to infer that the insect is not confined to it only.

It may be of interest to record the dragon-flies seen in the Forest in less than three days' (June 22nd—24th) visit:—*Sympetrum striolatum*, a few, very immature; *Platetrum depressum*, not common; *Libellula quadrimaculata*, very common at a pond near Lyndhurst; *Orthetrum cærulescens*, abundant, especially at the ditch referred to; *Cordulegaster annulatus*, one only; *Anax formosus*, in drives in the woods, and over ponds, not common, but conspicuous from its commanding size and power of wing; *Calopteryx virgo*, common; *Pyrrhosoma minium*, abundant at the ditch referred to; *Ischnura elegans*, a few; *Agrion mercuriale*; *A. puella*, common; *Lestes sponsa*, a few, and all immature.—R. MCLACHLAN, Lewisham, London: *June* 25*th*, 1896.

Spilomyia speciosa in the New Forest.—In 1893 I caught two male specimens of this fly in a glade near Brockenhurst, resting on decayed oak trees. From May 28th to June 7th this season I secured in the same spot eighteen male specimens, and this does not represent all I saw; I was disappointed in meeting with no females. Can any of your readers give me any information as to these latter?—GERTRUDE RICARDO, 34, Kensington Mansions, S.W.: *July* 14*th*, 1896.

"*Flies riding on beetle-back.*"—Baron Osten Sacken calls our attention to notes on this subject in the Bull. Soc. Ent. de France, 1896, pp. 162—166, where M. P. Lesne and Dr. Chobant relate their experiences with regard to the same habits as observed by them in Algeria on *Ateuchus laticollis*, L., and *A. puncticollis*, Latr., respectively. M. Lesne identifies the fly with *Limosina sacra*, Meig. (Syst. Beschr., vii, p. 409), originally found by Dr. Waltl on the under-side of an *Ateuchus sacra* in Andalusia.—EDS.

Physocephala nigra, Deg., in the New Forest.—By an unfortunate error, the generic name of the Dipteron recorded by Mr. F. C. Adams, at p. 162, *ante*, was rendered as *Chrysocephala*, instead of *Physocephala*.—Eds.

The development of the scale in a female Lecanium.—In a privet hedge in my garden a single shoot of hawthorn has grown up, and after being annually cut down to the level of the privet has, for four or five seasons, been allowed to remain so as to attain a small head. On this plant I once introduced some *Pulvinaria oxyacanthæ*, and have nursed the progeny since, with the exception of two alternate intervening years, when they were not apparent. This year, in May, instead of this species, I saw fixed on a low branch six small female scales of *Lecanium genevense* just starting on their post-hibernal career, and daily watched the manner of their development; the process was very rapid, occupying about a week, and being without previous record, so far as I know, I think it is worth noting. Down the whole of the dorsal middle, the texture there being very thin and soft, the scale without actual fissure, seemed to open out widely and at the same time the gap thus apparently made filled up from beneath the old sides, with an extending skin-like membrane lighter and brighter in colour than the old and remaining portion of the scale. On the new part was depicted a white figuration, in form eventually like the vertebræ of a flat fish, the whole scale becoming as its enlargement proceeded more and more convex and shining. In another week or so the full normal rotundity was attained, the white markings disappeared, the ground-colour became duller, the surface irregularly pitted and wrinkled, as in the usual condition of maturity.

I saw no male scales; they had doubtless fallen off after the exit of the winged males, and these again had perished immediately after they had fulfilled the purpose of their brief existence.—J. W. Douglas, 153, Lewisham Road: *June* 13*th*, 1896.

Insectivorous Insects.—On June 13th last, while strolling through my favourite woods, I noticed a specimen of *Neoitamus cyanurus* sitting upon a bracken frond with unwonted contentment. Upon capturing it I found it to be a ♂, which was holding between its anterior legs an apparently scarcely dead specimen of *Hepialus hectus*, ♂. This moth is common hereabouts, and if many *Neoitami* make as hearty a mid-day meal as that I took they should have a pretty good time. I have often noticed the pugnacious proclivities of the *Asilidæ*, especially *Dioctriæ*, and the manner in which they will swoop, sometimes from a considerable distance, upon their prey, but upon all previous occasions it has been various species of *Anthomyidæ* and *Muscidæ*, and never a Lepidopteron that has suffered. The *Hepialus* had probably been resting, as is often their wont by day, upon the under-side of the frond.

The majority of *Fossores* are essentially insectivorous, yet the case of *Mellinus arvensis* with *Syrphus ribesii* between its mandibles, at almost the same spot in July, 1893, may be of interest, especially as I doubt if the former could have taken the latter upon the wing, for what eye can follow the dart of a hovering fly? and even when settled upon a neighbouring twig or leaf, to which, like *Apatura Iris*, they almost invariably return, they are excessively wary and difficult to capture. The subject appears of great interest to me, and to open out a field of investigation as yet unworked.—Claude Morley, Ipswich: *July*, 1896.

Discovery of the male of Prestwichia aquatica, Lubbock.—You will be pleased to hear that I have been fortunate in discovering the male *Prestwichia aquatica*, Lubbock. It is *apterous*, three quarters of a millimetre long, resembling in colour and appearance a poor starved flea, and as active when on the surface of the water, which it has some difficulty in entering, though when one leg is through the film it appears to lever itself down and swims easily, using its second legs principally.—F. ENOCK, 21, Manor Gardens, Holloway: *July*, 1896.

Eupœcilia gilvicomana, Z., as a British Insect.—In Ent. Mo. Mag., Ser. 2, vol. vii, pp. 19-20, Mr. R. McLachlan draws attention to the omission of *Hadena peregrina* from Mr. E. Meyrick's recently published "Handbook of British *Lepidoptera*." Another omission that calls for remark is that of *Eupœcilia gilvicomana*, and as its history as a British insect does not seem to be generally known, it may be useful to recall the facts. In Entom., xii, pp. 205-6, the late Mr. F. O. Standish, writing on July 19th, 1879, from Cheltenham, where he was living, recorded the recent capture by himself of a series of "*Argyrolepia Schreibersiana*" flying over mixed herbage and grass: the locality is not actually named, but it is obvious that it was close to Cheltenham, for he says, " . . . the daily rains have made it most difficult to procure fine specimens." On p. 263 of the same volume of "The Entomologist," Mr. E. G. Meek, writing on Oct. 9th, 1879, states that he had recently received from Mr. Standish some of his supposed *A. Schreibersiana*, to which he had alluded in his published note (*loc. cit.*), but they proved to be not that species, but had been identified by Dr. Staudinger as *Eupœcilia gilvicomana*, Z. (= *flaviscapulana*, H.-S.), which insect is therefore added to the British List by Mr. Meek. It seems clear that Standish only took the species in the single season of 1879, for his note reads as though he had never seen it previously, and he died on April 12th, 1880, but he must have found it rather plentiful, for all the specimens, a few dozens in number, that I have ever seen in British collections were certainly taken and set by him, and he is well known to have been absolutely trustworthy. No one else seems to have yet met with it in Britain, but it probably still holds its own at Cheltenham, unless the spot happens to have been built over. At the recent sale of the Standish collection of *Tortrices*, I noticed with much interest that the series of *E. gilvicomana*, though considerably reduced by Mr. Meek while the collection was his property, was still standing with the name "*Schreibersiana*" below it, exactly as Mr. Standish himself had placed it in his ignorance of the real identity of his captures. The larva has been recorded as feeding on the continent on *Chenopodium*, *Prenanthes muralis*, *P. purpurea* and also on flowers of *Solidago virgaurea*, but I expect this last record really refers to the larva of its ally, *E. curvistrigana.*—EUSTACE R. BANKES, The Rectory, Corfe Castle: *June 6th*, 1896.

Tinea vinculella, H.-S., in the Isle of Purbeck.—This pretty little species which was added to the British List by Mr. Nelson M. Richardson, in Ent. Mo. Mag., Ser. 2, vi, pp. 61-65 (1895), has, as regards Britain, hitherto only been recorded from the Isle of Portland; it is therefore satisfactory to be able to chronicle its occurrence in the neighbouring Isle of Purbeck. I have lately seen and identified as *T. vinculella* a fine specimen that was taken, while crawling up a grass-stem on the Purbeck coast, on July 8th, 1882, by the Rev. C. R. Digby, for whom it was determined by Mr. J. B. Hodgkinson as a variety of *T. argentimaculella*: this is, apparently, by several years, the earliest known capture of the insect in Britain. Another specimen, which I have no doubt is also referable to this species, though I have not actually seen it, was swept from short herbage in the same spot by Mr. Digby, on July 31st, 1888, in which month and year Mr. Richardson took his first example in Portland. And not only has it been met with in this district in the perfect state, but I myself have, by close searching, secured this month on our Purbeck coast a moderate number of the larval cases on minute lichen on stones and pieces of rock loosely piled together: the cases are of all sizes, from the largest, which apparently contain pupæ and full-fed larvæ, down to those that are still extremely small, which will probably not yield the moths before next year. Besides the tenanted cases I find a fair proportion of full-sized empty ones, some looking fresh and showing the protruding pupa-shells as though their tenants had escaped during this season, whilst others are old and broken, suggesting that the imagines emerged a year ago at least; owing to their being so well protected from the weather, disintegration must necessarily be a very slow process with them. Excellent enlarged coloured figures of imago, larva and case, from beautiful drawings by Mrs. Richardson, together with a full and interesting account of the species by Mr. Richardson, have just recently been published in Proc. Dors. N. H. and A. F. Club, vol. xvi, pp. 81–87. As Mr. Richardson there says that he has never seen the case on the top of a stone, it is perhaps worth mentioning that in a few instances I have found the case in such a position where the top of the stone was covered by an overlying stone; as a rule they are only found on the under surface, or not infrequently on the sides which are protected by other stones, and the larvæ seem most carefully to avoid any exposed surface.—ID.: *June 14th.*

P.S.—I am pleased to be able to add that the first imago from my batch of cases has emerged to-day.—E. R. B.: *June 16th.*

Plusia moneta at Watford.—On the evening of the 19th inst., I caught a specimen of *P. moneta* flying over a honeysuckle bush in the garden of my friend Mr. Clarence E. Fry here. It was nearly 10 o'clock, and so dusk that, although I thought I had taken a *Plusia* of some kind, it was not until I got home that I discovered the value of my capture.—ARTHUR COTTAM, Eldercroft, Watford: *June 23rd*, 1896.

Plusia moneta at Leatherhead.—Mr. T. H. Briggs, of Leatherhead, sent us a note that he, his son, and daughter, had recently taken four specimens of this moth, ♂ and ♀, hovering over the flowers of *Aconite* in his garden. This note was duly sent on to the printer, but he did not receive it, and it has been thus lost in the post.—EDS.: *July 23rd*, 1896.

An English Entomologist arrested in Algeria.—At noon, on the 22nd inst., on the outskirts of the Forêt de el Houbëira, a party of Arab harvest-men on their way to reap corn, came plump upon a European eating lunch under a cork-tree at the edge of a swamp. Dressed like a dirty tramp, without a collar, and wearing a hat that had once seen better days, appearances were very much to his disfavour; so without more ado they sat down in the shade to take stock of him and his gear. Six feet of "sugar cane" (bamboo) with brass fittings, a sun-umbrella, square straw basket, muslin nets not strong enough for fish, bottles full of dragon-flies, and *Neuroptera* among bits of tissue paper, a walking stick and pocket compass; no resources, and no paper of identification—clearly a suspicious character, or wandering lunatic, who ought to be taken to their Sheikh. But the question was, "How to get him there?" They had shared his bread and butter (when assured that it was not lard), and so were debarred from using force. At length after much conversation in Arabic, on their side (which he did not understand), and French, on his part (of which they hardly knew a word), one of them glancing at an empty bottle offered him a drink at the *douar*, while others catching up various articles strolled off in that direction, making signs to him to follow. *His* way to the Sheikh, however, lay in quite the opposite direction; and so for an hour or more amidst general merriment they had to make with him a long detour through swamp and scrub, until (his exploration of the locality completed) he headed towards their huts. On nearing Aine Kriar, the Sheikh was shouted for, and they settled down to reap. The Sheikh, coming up, seized basket, umbrella, and bamboo, and marched the prisoner to his shed. Then an Arab who could speak a little French was sent for; also a Marabout to write in Arabic a report of the capture and copy it into a book. All this took time, for in the middle of copying, the Marabout broke off to tell the Sheikh a long story about something else. Then a messenger was fetched to carry the report to a village three miles off, to be rendered into French for the Administrateur, who cannot read written Arabic, the prisoner's offer to do all the writing not being accepted. He was, however, allowed to send a note to the Inn to say he would not be back to dinner, having been informed that he had to go under escort to La Calle, about twelve miles distant. The Sheikh's intention was that prisoner and escort should share one horse between them. Prisoner objected to the arrangement, and advised the Sheikh to be careful not to get into trouble. So two horses were brought in from the pasture; one was saddled for the escort, and the other (fitted out with a queer sort of ring and bit in its mouth, suspended, like a nose-bag, by a string behind the ears) had a bag of provender for the night thrown loose across its back for the prisoner to sit upon, with his legs dangling one on each side of the horse's neck. The beast was hog-maned, so there was nothing to hold on by. Prisoner made a leg, was hoisted on to the sack, escort called "Have courage," and a start was made for the lock-up at La Calle. The sack behaved pretty well over the few miles of rough track that led to the highway; but cargo would shift a bit in jogging down hill and negotiating ditches, and prisoner had to keep on changing his seat from the middle to either end, whichever happened to come uppermost, escort on occasion dismounting to give a timely shove when matters grew utterly desperate. Presently there came into view the Administrateur and his orderly on their way to Le Tarf. The prisoner being ahead of his escort, rode on serenely past them without pause or acknowledgment, and, as one unaccustomed to be shouted after by any who wished to speak to him, turned a deaf ear to all calls to come back, until signs made by people in front left no excuse for going further. Then turning round and ambling up to the Administrateur, he began: "Monsieur, this is very amusing. The Arabs found me in the woods. I have no papers. They knew no French; I speak no Arabic; explanation was impossible. I am given to understand that under the circumstances I had to appear before you, and from what I can gather they have acted according to the regulations." *Administrateur*: "You are English, are you not? Why have you not a *Permis de circulation dans les Douars?*; you have a Consul at Bône." *Prisoner*: "Never heard of such a thing, and naturally, therefore, never applied for one. Nowhere in Algeria before have I found papers necessary." *Admin.*: "Near the Tunisian frontier precautions not elsewhere required have to be taken, on account of robbers and other bad subjects ready for any violence; and without a *Permis* it cannot be known who you are. Were you properly treated? What is your occupation?" *Prisoner*: "I have nothing to complain of, and amuse myself with herborizations and entomology" (bottle of dragon-flies produced for inspection). Prompt discharge of prisoner, who returned to the Douar, and dined after all at Le Tarf. And so was lost a fine opportunity of sampling *Pediculi* that night in an Algerian lock-up.—A. E. EATON, Le Tarf, Algeria: *June 25th*, 1896.

[Our friend's amusing adventure will probably induce other English Entomologists visiting the same district to obtain the requisite "*permis*" before doing so.—EDS.]

Review.

THE GYPSY MOTH, PORTHESIA DISPAR, L.: a Report of the work of destroying the Insect in the Commonwealth of Massachusetts, together with an account of its history, both in Massachusetts and Europe: by EDWARD H. FORBUSH and CHARLES H. FERNALD, A.M., Ph.D. 8vo, pp. 495, and 100 pp. of Appendices and Index. Published under the direction of the State Board of Agriculture, Boston, 1896.

It is not often possible to even approximately determine the date of introduction of a foreign injurious insect. In this case, however, there seems no reason to doubt that the insect was introduced into Massachusetts in 1868 or 1869 by M. Léopold Trouvelot, a French naturalist, astronomer, and artist, then residing temporarily in the States. Some, or all (probably larvæ), unfortunately escaped, and M. Trouvelot, knowing the destructive powers of the insect at home, gave due notice of the fact to the authorities, yet probably little dreaming of the disastrous results that followed. In the first ten years little was noticed of the insect; then it began to cause great damage in the more immediate vicinity of its introduction, increasing and spreading rapidly, until in 1890 a Bill passed the House of Representatives, providing against its depredations, and a Commission was appointed to consider the whole subject (see Appendix, pp. i—xxvi), one outcome of which is the bulky volume now before us. The first part, to p. 354, is by Mr. Forbush, the Field Director, and is especially practical; the second part, by Prof. Fernald, is both scientific and practical; the whole illustrated by several excellent coloured plates, numerous plain ones, exquisitely rendered from photographs, illustrating the effects of the larvæ on foliage and fruit trees, and very many diagrams in the text. It is not our intention here to go at length into the practical part of the Report, and the details of the innumerable experiments with insecticides, mechanical means, &c.; these must be attended to exhaustively by every student of Economic Entomology. A list is given of thirty-eight species of birds detected in feeding on the moth in some stage or other, finishing with the English sparrow, though in another place this much-abused bird is considered to do more harm than good, because it drives away the native feathered benefactors (figures of the more prominent birds are given). Regarding this part of the subject it must suffice to say that the unceasing warfare against the insect has had a marked effect in lessening its ravages, but it it evident that if this be even temporarily relaxed, its increase and spread are inevitable. So much for the results of the escape of a few introduced larvæ in 1868 or 1869.

If the first part of the Report is exhaustive in its particular aspect, equally so is the second, by Prof. Fernald, which may be taken as a model of patient scientific research. The bibliography of the subject is a masterpiece in itself; commencing with Gödart in 1663 and ending with Meyrick in 1895, it embodies a list of over 700 published references, of which only about 25 are indicated as not having been seen by the compiler, which speaks volumes for the amount of research, and also for the completeness of American libraries in Entomological literature. Then follows its distribution in the Old World, with a chapter on its history in England, which we reprint (pp. 169—173, *ante*), and which is of great interest on account of its earlier references. We are scarcely disposed to agree with the conclusions arrived at. That the stronghold of the insect here was in the Fen districts seems practically certain, and to a considerable extent it seems a parallel case to that of *Papilio Machaon*, both species having a restricted habitat here, under conditions opposed to those usual with them on the continent, and though one has succumbed, the other remains. Its natural history and anatomy are treated upon in the fullest possible manner, together with its parasites and other natural enemies. Not the least interesting is the account of its food-plants. Experiments were made with over 500 plants, from the tallest tree to the most lowly grass or herb, including several ferns, and on all of these it fed more or less readily; whereas those on which it would *not* feed number barely 20. We have already extended this notice far beyond the limits ordinarily allowed for "Reviews," and conclude by congratulating the authors on the production of a most important work in whatever aspect it may be considered. —R. McL.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *May 28th*, 1896.—C. G. BARRETT, Esq., F.E.S., Vice-President, in the Chair.

Mr. A. H. Bartlett, M.A., 34, Vanbrugh Park, Blackheath, was elected a Member.

Mr. McArthur exhibited a bred series of *Hypsipetes ruberata*, and *H. trifasciata*, from Hoy, which as imagines were inseparable. The latter species was reared on heath; also from the same locality *Eupithecia venosata*, *E. pulchellata* and *Melanippe fluctuata*, var. *neapolisata*. Mr. Warne, the curious wine-glass-shaped nest of *Agelena brunnea* from the New Forest. Mr. Sauzé, a small specimen of *Sinodendron cylindricum*, taken by Mr. Adkin at Worthing; and *Ledra aurita*, *Silpha quadrimaculata*, *Hippobosca equina* and *Hoplia philanthus*, all from the New Forest. Mr. West, on behalf of Mr. McArthur, specimens of *Chrysomela arvensis* and *C. sanguinea*, from Hoy, with *C. distinguenda* from the S. of England for comparison with the local northern *C. sanguinea*. Mr. Edwards, a twig of fir containing the habitation and larva of *Tortrix piceana*, from Brockenhurst. Mr. Filer, larvæ of *Pœcilocampa populi* and *Trichiura cratægi* from Epping Forest. In reporting on the Field Meeting at Brockenhurst, Mr. Edwards said that imagines were more plentiful than last year, and that larva-beating was very successful. The weather was fine and some twelve Members were in attendance during the three days. *Macroglossa fuciformis* and *M. bombyliformis* were both captured. Larvæ of *Limenitis Sibylla*, *Catocala promissa*, *C. sponsa*, *Tæniocampa miniosa*, *Spilosoma mendica*, *Zephyrus quercûs* and *Z. betulæ* were among the species found.

June 11*th*, 1896.—C. G. Barrett, Esq., F.E.S., Vice-President, in the Chair.

Mr. H. W. Monington, 141, Broomwood Road, Wandsworth Common, was elected a Member.

Mr. Lucas exhibited specimens of *Ischnura elegans*, *Pyrrhosoma minium* and a series of *Platetrum depressum*, including a male which had not developed the blue colour characteristic of the sex. They were taken by Mr. Turner, at Folkestone, on May 17th. Mr. West, of Streatham, a series of *Macroglossa fuciformis*, taken at Brockenhurst during the Whitsun field meeting. Mr. Barrett, the specimens of *Leucania favicolor* recently described by him, and which were captured on the coast of Essex by Mr. G. F. Mathew. It was apparently allied to *L. pallens*, from which it differed not only in colour and markings, but also decidedly in the shape of the wings. It was thought that if the exhibit were again brought up, after Members had examined their own series, a discussion could take place. Mr. Barrett also exhibited several beautiful bright uniform red forms of *L. pallens* from the same locality; a very large and dark specimen of *Mamestra abjecta*, and a beautiful var. of the same having all the markings clear and distinct upon a light ground; a var. *remissa* of *Apamea gemina* and a specimen of *Hadena genistæ*, to both of which the var. of *M. abjecta* was comparable in many respects. Mr. N. E. Warne, a series of *Procris statices* from Keswick, and a few specimens of *Emmelesia adæquata* (*blandiata*) one of which had the central band almost complete. Mr. Tunaley, a specimen of *Empis tesselata* having in its grasp a *Tipula*, which it had captured. The middle legs of the *Empis* clutched the shoulders of the wings of the *Tipula*, the hind-legs were bent under the wings and body, while the fore-legs of the *Empis* were free to grasp any support. The *Tipula* was thus held in a vice and frequently lost its legs in the struggle. The *Empis* repeatedly pierced the thorax of the *Tipula* with its lancet, but was not always successful, owing to its struggles. This could easily be observed if the insects were placed together in a small box. He also exhibited an asymmetrical form of *Coremia designata* from Ranmore, having the band of the right primary narrower than usual, but filled in completely with the dark colour. The inner margin of the band was more straight than in normal specimens. Mr. Mansbridge, a specimen of *Syrichthus malvæ*, having a notch at the apex of all the wings in which the cilia were present, but shorter than usual. A discussion ensued, some Members considering it to be caused by an injury to the pupa, and others thought that the cilia were shorter than usual, and that the proximity of the white patch somewhat accentuated the appearance of the notch. Mr. Edwards, a specimen of the rare *Papilio danisepa* from the Khasia Hills and a short series of *Leptocircus curius.* He then read a few notes on the very aberrant genus of the *Papilioninæ*, *Leptocircus*. After enumerating the species and stating the characters by which it differed from the other genera of the family, he described its distribution and quoted the opinions of various collectors that the species were mimics of species of *Neuroptera* both in their appearance and habits. It was noted by various Members that the defoliation of the oaks was this year not so much due to the attacks of *Tortrix viridana* as to the larvæ of the different species of *Hybernia.* It was also remarked that oaks having bright green foliage had comparatively escaped attack, but that trees which had leaves of a dark brownish-green were mostly completely stripped.

June 25*th*, 1896.—The President in the Chair.

Mr. West, of Streatham, exhibited a bred series of *Hypsipetes ruberata*, containing uniform and banded specimens, and a specimen of *Trochilium crabroniformis*, bred from an osier stem cut at Streatham, in expectation of obtaining *Sesia formicæformis.* Mr. R. Adkin, a bred series of *Eupithecia venosata* from Hoy, with series from Shetland, Forres and I. of Man for comparison, and noted that the Orkney ones were of a browner shade, while the I. of Man specimens were like S. of England netted forms; also full fed larvæ of *Calocampa vetusta*, reared on dock from Inverness-shire ova. Mr. Barrett, a series of *Osmylus chrysops* from Haslemere. Mr. South, types of the variation obtained from a brood of *Spilosoma menthastri*, from Aberdeen. Several were smoky, one had dark fringes, in another the edges of all the black markings had run in appearance. Mr. McArthur, the five most remarkable forms of *Abraxas grossulariata*, bred this year from some 3000 larvæ. In one, the black external to the yellow band was almost entirely suffused; another was slightly smoky and the spots had the appearance of having run; a third had the fore-wings almost entirely black, with the outer half of the hind-wings wholly black; another had the hind-wings with a narrow black border, from the middle of which a wide streak ran into the centre of the wing. The smoky form was remarked as being very rare. Mr. Dennis, a series of *Cænonympha Typhon* from N. Lancashire, taken early in June. The specimens had very pure white markings underneath, referable to var. *Rothliebii.* Also he exhibited several very brilliant *Cyaniris argiolus* from Horsley, of a shade approaching that of *Polyommatus bellargus. Limenitis Sibylla* was reported as out in the New Forest early in June. Mr. Turner made a few remarks on Byfleet, the locality visited by the Society, under the able guidance of the Rev. E. Tarbat, on June 20th.

A COLLECTING TRIP ON HALEAKALA, MAUI, SANDWICH ISLANDS.

BY R. C. L. PERKINS, M.A.

After a week of unsettled weather which showed no sign of change, I left the mountains of West Maui and started for Haleakala, the great mountain which forms the whole eastern part of this Island, with the intention of camping out for a month.* Leaving in the morning, we had by 4 p.m. ascended some 5000 feet above sea-level, and although I had intended to push on several miles further, the drizzling rain which had been falling for an hour or more decided me to stop. Dismissing the boy who had accompanied me with his horses, I fixed up the "fly" of my tent, building in the open ends with large logs and woven ferns. For a fortnight the wet weather continued with squalls from the south-west, and dead calms between, but afterwards the usual trade-winds blew strongly day and night, and no further rain fell until I left at the end of the month. The first half was by far the better period for collecting; but it was less comfortable, the dripping vegetation and soaked ground affording a bed which soon became little better than a manure heap, and though agreeable enough to sundry species of *Carabidæ*, was far otherwise to the camper out. However, with the fine weather, trenches dug around soon drained the ground, and though I had been forced to leave the tent at home, the "fly," when the ends were closed up, kept everything snug enough, though it had added but 9 lbs. to the impedimenta. At 5000 feet the change from the tropical heat of the lowlands is very great, bright starry nights being particularly cold, but there was no frost during my stay, although some months previously it had been severe enough to form quite thick ice.

The upper edge of the forest proper seemed far from rich in the variety of its trees. "Koa" (*Acacia koa*) and "Ohia" (*Metrosideros*) are the chief components. Scattered amongst them in lesser numbers are the "Mamane" (*Sophora chrysophylla*), the "Olapa" (*Cheirodendron*), another genus unknown to me by name, and still less abundanly a species of *Pelea*, generally festooned with grey lichen and very attractive as a shelter for many species, not to mention others confined to it—*Micro-Lepidoptera*, *Chrysopa*, *Hemerobius* and certain *Anobiids.*

The underbrush is a dense growth of fern and native raspberry (*Rubus macræi*, "akala" of natives), whose flowers are the delight of several honey-sucking birds, and produce a very large, edible (but bitter) berry. Cattle and wild pigs form runs through this growth, and by these one can easily get around with comfort in dry weather, but not without a thorough drenching in or after rain. In the inaccessible ravines and those which are difficult to ascend, numbers of other trees and plants are found, many of which no doubt grew freely on the flats and ridges before the cattle had destroyed them. Chief among them are the "wauke" (*Broussonetia*), a food-plant of the native *Vanessa*, several superb arborescent *Lobeliaceæ*, the creeping *Smilax* now out in full bloom, the fragrant "Maile" (*Alyxia*), and the beautiful pink or white-flowered *Begonia*, the "Puamakanui" (flower with the big eyes) of the natives, *Hillebrandia sandwicensis* of botanists.

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* In May, 1896.

A thousand feet or so lower down there is considerable change in the vegetation. "Koa" and "Ohia" remain, but the "Akala" becomes scarcer, and a softer fern appears. "Koolea" (*Myrsine*) and "Pua" (*Olea sandwicensis*) are abundant, and "Opiko" (*Straussia*), "Naio" (*Myoporum* = bastard sandal), "Pápala" (*Pisonia*, one of the trees from which the old natives procured their birdlime), climbing "Ieie" (*Freycinetia*), and scattered tree-ferns are evident. Further along the windward side of the Island the interior is more boggy with luxuriant growth of "Painiu" (*Astelia*) and *Cyperaceæ*, but this ground I visited in 1894 and left alone on the present occasion.

Several species of *Lepidoptera* were abundant enough, chiefly *Micros* and *Pyralidina*. The beautiful native *Vanessa* flew gracefully around, its thick-set spiny larva feeding on the "wauke" trees in the gulches. *P. cardui* swarmed as larva and imago amongst a tall handsome introduced thistle, already become a plague, and *P. Huntera* was in the open country. *Lycæna bœtica* was noticed as high as 6000 feet, and occasionally in the forest the little hair-streak (*Holocheila Blackburni*).

A few species of *Noctuæ* came freely to the wet decaying ferns forming the ends of my house, feeding on the moisture. On exposing a light they dropped to the ground, quite incapable of flight. All were *Agrotis*- and *Leucania*-like species, amongst the crowd some very nice varieties. *Hypænoides*, several *Pyralids*, and a number of *Micros* were amongst these. With the dry weather, however, they entirely ceased to come.

Of *Geometridæ* two or three species of *Eupithecia* came to light or were netted in the brief twilight, and a few species of *Boarmidæ*. One of these, an obscure species, had entirely destroyed the foliage of the Koa trees through miles and miles of forest, so that at first sight they appeared all dead, and gave a remarkable appearance to the woods as seen from a higher level. A similar or identical species had done the same last year and this spring, throughout whole districts on Hawaii. The moths, which followed the larvæ, for a time filled the woods like swarms of bees, rising from the ground and hollow trunks as one passed.

The *Pyralidina* were chiefly species of *Scoparia*, *Mestolobes* and *Orthomecyna* or allied forms. Some *Micros* were very abundant, probably nearly all *Œcophoridæ*, except for a few metallic species, one of which has been assigned to *Chrysoclista*.

Tortrices were very scarce, as they are throughout the whole group; probably they are kept down by the large number of endemic *Odyneri*, which seem to prefer their larvæ to those of other moths for provisioning their cells. A species of *Proteopteryx*, well known to me on other Islands, was amongst the Ohia trees, one or two other species of probably undescribed genera turning up singly, A few specimens of *Bactra* sp. ? flew gently around at sunset.

Coleoptera on the whole were hardly as numerous as in 1894, and I missed several nice species, though there was no reason to complain of the *Carabidæ*; the two rarities, *Disenochus* and *Atrachycnemis*, were both found, though as scarce as usual. With them was a species of another genus as yet undescribed, but known to me from the mountains of West Maui as well as from those of Molokai. *Barypristus Sharpi* was under bark or fallen limbs of Koa, in the chinks of which I have watched it ovipositing. Various species of *Metromenus*, *Cyclothorax* and *Bembidium* were more or less abundant, and a fine new one of *Mauna*, under bark, replaces the *Mauna frigida* of the country above the forest line, just as is the case with the two species of *Barypristus*. Yet another species, apparently a distinct genus allied to *Mauna*, was found singly, and a casual specimen of *Blackburnia* turned up without being specially looked for in its favourite locality.

Only two water beetles, ubiquitous throughout the Island, were noticed in the many streams, and *Staphylinidæ* yielded only one or two minute endemic *Oligota* and the common *Glyptoma Blackburni*.

Curculionidæ were rather better, with a nice species of *Acalles* from *Myrsine*, a single specimen of *Anotheorus* ?, fine series of several species of *Oodemas*, mostly obtained by searching dead logs with a lantern after dark and under bark by day ; a solitary specimen of an undescribed genus always attached to the Olapa, found on most of the Islands but probably with more than one species, and *Dryophthorus* in wet logs.

Proterrhinus was not very well represented with about half a dozen species of no particular interest, two of the nicest species being apparently out of season. Several species of *Cis*, one probably peculiar to this mountain and the finest in the Islands, and one of *Xyleborus*, burrowing as usual in the dead and decaying Olapa trees, were more or less common.

Brachypeplus was represented by four or five species, one of which, living beneath the bark of the Koa, was a peculiar form, excessively flattened and not known to me from elsewhere. A single large specimen beaten from flowers of *Smilax* is probably referable to the allied genus *Gonioryctus.*

Anobiids were numerously represented by species of the two endemic genera, *Xyletobius* and *Mirosternus*, and for the first time I managed to get a fair number of *Holcobius* in two or three species. These latter far exceed the species of the two first-named genera in size, and for the Islands are quite fine insects. Their habits are altogether nocturnal, those of the other two genera diurnal.

Singly and rarely as usual were found specimens of *Brontolæmus* and *Læmophlæus æneus*, but the former did not seem to me identical with those on the other Islands, trusting to memory.

Elateridæ were evidently not fully in season, as I saw more of the larvæ than the beetles. About half a dozen of a probably new species of *Eopenthes* were only taken. Under bark and in wet logs were two or three species of *Fornax*, one of which I bred from long wireworm-like larvæ. A larger black species, previously found on Hawaii, was also here but not in season, as I saw only fragments of the beetle but got the pupa and larva, the latter very different to those of the smaller species and burrowing in the hardest wood.

The endemic Longicorn genus *Clytarlus* was represented by five species, three attached to *Acacia koa* and two (both new species) to *Sophora chrysophylla*, another Acacia. These beetles are generally found running swiftly over the trunks and limbs of trees in the hot sunshine. While the female is ovipositing in the chinks of the bark the male walks with her, his front legs clasping the shoulders, the others on the surface of the tree. Pairing takes place afresh before the laying of nearly every egg, but is of very short duration after the initial act. The males often dispossess one another of their partners, and both sexes frequently get mutilated in their struggles. A laying female, if unattended, is sure to be seized on by the first male that passes near. On capture they stridulate very audibly, and obviously from their movements also when pairing, though I failed to hear the sound under these circumstances.

Of other groups, Aculeate *Hymenoptera* were unusually scarce, a few species of *Odynerus* and *Crabro*, two or three of *Prosopis* and *Mimesa antennata* were taken, besides which there were a few rather nice *Ichneumonidæ* and minute *Chalcids.*

Of *Heteroptera* the best were two species of *Emesiidæ*, one an apparently apterous form. These excessively delicate gnat-like creatures with raptorial front legs were preying on the young of various species of *Psocus.*

Neuroptera.—Two bright red and black Agrions abounded throughout the forest, and two or three other species were in lesser numbers. The nymphs go through their last changes with surprising quickness. On one occasion I collected about a dozen of them in a cooking tin in the morning, when they were swimming around in a small pool ; on my return towards evening several perfect dragon-flies were already hatched out.

Besides these, a few really beautiful species of *Chrysopa* and *Hemerobius* occurred, and several species of *Psocus* were very abundant.

Orthoptera were represented by a species each of the apterous *Prognathogryllus* and green *Brachymetopa*, the latter identical with the species in the West Maui Mountains, but very distinct from the Oahuan form.

Above the forest the country is very different, and has a number of peculiar species. I visited the summit on one occasion, 10,000 feet above sea-level, and but for the raging trade winds, which carried away all winged insects as soon as disturbed, more specimens if not species would have been collected. Here the vegetation is very different. Up to about 9000 feet there is a varied scrub ; the Mamane, a forest tree, becomes reduced to little more than a creeper ; the "Puakeawe" (*Cyathodes*) and the "Ohelo" (*Vaccinium*) with its edible berry and dense growth of lichen, cover large tracts of ground. In places wild strawberry (*Fragaria chilensis*) and the creeping *Coprosma*, with a black berry beloved of the "Nene" (*Bernicla sandvicensis*), are abundant, but the goose is now almost, if not entirely, extinct on this Island, though still found on the uplands of Hawaii. At about 8000 feet and upwards *Geranium tridens*, a lovely plant, with silver tridentate leaves, and *Raillardia menziesii* are conspicuous ; above these there is little save tufts of grass and unattractive fern, excepting the superb "silver-sword" (*Argyroxiphidium*), now mostly destroyed by goats around the mountain top, though still common enough inside the crater.

In this region *Carabidæ* form the chief part of the beetle fauna. *Barypristus rupicola*, *Mauna frigida*, a large strongly punctured *Cyclothorax*, and two or three smaller species of that genus are found right up to the summit. *Oodemas* is also found above 9000 feet.

Two or three *Noctuæ* are abundant, but were most difficult to catch, *Leucania* and *Agrotis*-like species, and several *Pyralidina* were peculiar to the region.

From 7000 to 8000 feet two Geometers were seen, a small black *Eupithecia* flying in the sun in the shelter of a gully, and a narrow pointed winged form resembling *Melanippe*. A large Tineid with reduced wings and incapable of flight is shaken from a grass tuft above 9000 feet, while a *Pterophorus* abounds amongst *Vaccinium*. A large *Ophion* is probably new, and the few Aculeates, two or three *Odyneri* and a very common *Prosopis*, are quite peculiar to the region.

From the top the view is magnificent, the far off mountains of West Maui, with the old crater of Eke, show up clearly beyond the low lying fields of sugar-cane. The sea of brightest blue and snow-white line of surf, the villages on the plains below, and miles of dense forest land between, are spread in full view; still further off rise up the three neighbouring Islands, Lanai, Molokai and Kahoolawe, and at our back behind the crater the giant mountains of Hawaii, the snow still glistening on their summits. The vast summit crater 30 miles in circumference, with sheer walls 2000 feet deep, is itself worth the hardest journey. From the bottom rise up numerous red cones, mere hillocks as seen from above, but in reality rising 200 or 300 feet above the floor of the crater; but best of all is the scene in early morning as the clouds pour into this vast pit or roll away before the rising sun. Indeed, if equalled, it is impossible that Haleakala can be excelled by any part of the globe in scenic interest.

In the above account I have attempted to give an idea of what may be expected in general collecting in one of the most easily worked parts of the group, and one above the average in productiveness. Many of the trees and plants mentioned are such as form the greater part of the forests throughout the Island. Generally speaking low-growing plants are, with a few exceptions, utterly unproductive, and so I have named but few.

Maui: *June 1st*, 1896.

RE-OCCURRENCE OF *BARIS SCOLOPACEA*, GERM., IN THE ISLE OF SHEPPEY.

BY JAMES J. WALKER, R.N., F.L.S.

It is always a great pleasure to recover an insect which has for many years been given up for lost, especially when the insect in question is so local and rare a species as *Baris scolopacea.* This weevil, first taken by my friend Mr. G. C. Champion in the Isle of Sheppey in June, 1870 (Ent. Mo. Mag., vol. vii, p. 107), and afterwards found by us in some numbers in 1872 and the three succeeding years (Ent. Mo. Mag., vol. ix, p. 117), seems to have disappeared altogether from its very restricted locality near Queenborough since 1876, and repeated visits to the spot by both of us at all seasons of the year have failed to produce a single additional specimen. On the 3rd of this month I walked out to Shellness, at the eastern end of the Isle of Sheppey, a locality I had never before visited, and found there a considerable extent of salt-marsh of most promising appearance, with a luxuriant growth of the usual littoral plants, among which *Atriplex portulacoides* was especially abundant. After sweeping here for some little time, and finding such beetles as *Apion limonii* (in plenty on *Statice limonium*), *Polydrosus chrysomela*, *Dolichosoma lineare*, &c., a small weevil turned up in the net, which I recognised at once as the long lost *Baris scolopacea.* It was late in the afternoon, and I was nearly twelve miles from home, but this capture induced me to set to work in earnest, and in about an hour I had the satisfaction of securing a fine series of the *Baris.* It came exclusively off the *Atriplex portulacoides*, and was apparently almost confined to one spot, about fifty yards square. The specimens taken on this occasion are nearly all fine and fresh, but even smaller than the original ones, ranging from the size of *Mecinus circulatus* down to that of *Miccotrogus picirostris.* Shellness is at least ten miles distant, in a direct line, from the locality where *Baris scolopacea* was formerly found, and is nearly opposite Whitstable, on the coast of Kent.

23, Ranelagh Road, Sheerness:
August 8*th*, 1896.

THE RECENT ABUNDANCE OF *TORTRIX VIRIDANA*.

BY C. G. BARRETT, F.E.S.

The devastation caused among oak trees by the larva of *Tortrix viridana* this summer, though by no means unprecedented, has yet been so far serious as to render it desirable that some record should be preserved. In this country, thanks in part to our changeable climate, but probably still more to the comparative protection and consequent abundance of our birds, really serious and destructive insect visitations are happily far from common; but from its extraordinary fecundity, and the great activity combined with secluded habits, of its larva, the present species succeeds in a series of favourable seasons in rendering itself a really destructive and alarming pest. In my own experience this has never been more fully exemplified than in the present season, and a few details may be of interest, especially to those who have not been sufferers by it.

I had determined this spring to make one more effort, at the end of May or beginning of June, to re-discover the very rare and interesting species, *Madopa salicalis*, which used, five and twenty years ago, to occasionally gladden my eyes in the woods round Haslemere, but which has been in recent years to all appearance absent. Accordingly, in the beginning of June, I ran down, but upon what again proved, in that respect, a fruitless errand.

On the way, as soon as Wimbledon was passed, a peculiar appearance of the woods (of which I had already heard) began to be most manifest. Here and there a patch of trees, in other places great belts of them, half a mile or a mile in length, and single trees in every direction, all oaks, exhibited the most curious brown appearance—not the blackness of a fire, nor quite the bareness of the winter season—when, indeed, the oaks are *not* always so bare as some other forest trees, but a peculiar brownness of bracts, and dead catkins, and bits of leaf entangled in web, giving all the twigs a rough-coated appearance, but without the relief of a single green leaf; a series of areas of desolation scattered through the otherwise lovely young green of the woods and fields. On closer investigation it appeared that some discrimination had been shown, some of the more advanced oak trees had scarcely suffered at all, others had half, or more than half, their foliage devoured, but the great mass were absolutely defoliated. Most of the larvæ had at this time disappeared, and a rain-storm or two had beaten down their threads of silk. Wherever ivy climbed one of the trees every leaf of it was spun together, or to the tree, dead leaves and living alike fastened down, and under or between these were the black-brown pupæ without number. At the foot of other trees, where honeysuckle crept, it was twisted together, and the leaves rolled or joined for the same purpose; and elsewhere on the aspen bushes, the tender and delicate leaves had been neatly and beautifully folded into the most tantalizing and deceptive chambers, each with its pupa of *viridana.* Each pupa did not, however, produce a moth. The ichneumon, to which no doubt we shall owe the reduction of the moth to its normal conditions, was well in evidence.

A week later I was at Ockley near Dorking, where the devastation was almost equally great. A kind friend—Mr. Goodchild, of Stilehurst—drew my attention to what was for a short time a real curiosity. A large and spreading oak, standing well out in an open space where some of the paths converge toward the mansion at Capel, had been chosen by, to all appearance, greater multitudes of the insects than usual; it had consequently become stripped before the larvæ were full-fed; so soon as food failed they had lowered themselves in thousands to look for more, filling the air with their delicate threads; when on the ground instinct had evidently guided them to re-climb the tree by the trunk, each, I suppose, leaving its silken thread as it ascended. The result was that the whole trunk of this large tree, with the larger branches, was covered with a thin, white, glistening, silken carpet or film, composed of the threads left as the larvæ climbed with those blown by the wind against the tree; and even when I saw it, after a heavy storm of rain, every sheltered patch of bark was still covered with this wonderful and delicate sheet. From my friend's account, which was fully confirmed by the patches still visible, this tree must, before the rain-storm, have presented a beautiful as well as truly extraordinary appearance.

The moths were then beginning to appear, and one of my daughters who had remained at Haslemere tells me that their multitudes were such that sheltered portions of the road were so covered with the moths as to present a most curious carpeted pattern; while the clustering upon the oak twigs was as though bunches of sessile whitish blossoms had broken out. Other thousands filled the air, and settled on the clothes of the passers by. Some effort at migration must have been made, for, despite the absence of oak trees here in the suburbs, imagines of this species were common about the limes and poplars in my own and the neighbouring gardens.

I did not observe this year that the maples had been stripped, though this happens sometimes when *T. viridana* is too abundant; but some sallows in the lower parts of the Haslemere woods had been as completely defoliated as the oaks, and, no doubt, by the same agency.

39, Linden Grove, Nunhead:
July 13*th*, 1896.

NEW INDIAN COCCIDS.

BY E. ERNEST GREEN, F.E.S.

The two new species of *Aspidiotus* described below are from a miscellaneous collection of Coccids, chiefly from India, kindly handed over to me by Dr. F. Moore, F.Z.S.

ASPIDIOTUS MOOREI, *n. sp.*

Female puparium (fig. 1) very inconspicuous; rugose and coloured like the bark upon which it rests; circular, flattish above, slightly concave below; very solid and opaque, the margin thicker than the median area. Pellicles reddish-brown, inconspicuous; sometimes concealed by a layer of secretion; one or both sometimes absent. The insect lies in a shallow depression excavated in the bark, and coated with whitish or greyish secretion deposited in distinct concentric rings. Diameter, 2·50 mm.

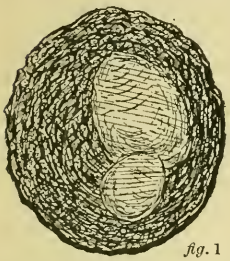


fig. 1

Male puparium not observed.

Adult ♀ (fig. 2) reddish-brown, flattened, entirely chitinous; dorsal surface highly polished. A deep lateral notch and transverse groove behind the cephalo-thoracic segment and another behind the metathorax divide the body transversely into three subequal parts; the first consisting of the head and prothorax, which is rounded in front and narrower than the second section comprising the meso- and metathorax. The third section consists of the abdominal segments, which are all united into a single piece forming the pygidium, the suppressed segments being indicated by transverse curved grooves on the surface which do not reach the margin. There are two large well defined circular depressed areas in front of the rostrum, of a paler colour than the surrounding parts. There is a moderately large group of parastigmatic glands round each of the anterior spiracles. No circumgenital (grouped) glands. Tubular spinnerets absent or obscured by the excessive chitinization of the pygidium. The extremity (fig. 3) bears normally four large prominent rounded lobes, with a small tooth-like lobe on each side; but in the older examples the lobes are often more or less obliterated by a chitinous thickening of the margin. A pair of very conspicuous club-shaped callosities run inwards and upwards from between the mesal and second lobes. There are apparently no marginal squames (*plates*, Comstock); though it is possible that they may be present in the early adult ♀. There are three

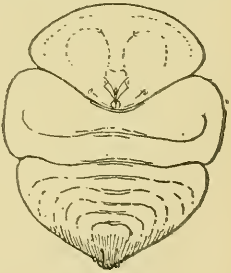


fig 2

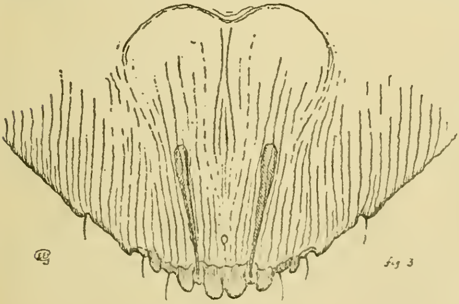


fig 3

long hair-like spines on each side. The anal orifice is very small, and situate close to the extremity. Length, 1·50 to 2 mm.; greatest breadth, 1·50 mm.

Habitat: on bark of *Grislea tomentosa*; Madras, India.

The insect forms shallow pits in the bark, or insinuates itself into crevices or under loose pieces of the bark. It belongs to the group (of which *Aspidiotus articulatus*, Morg., is the type) having a transverse groove behind the cephalo-thorax. The present species (which I have much pleasure in dedicating to Dr. F. Moore) may be readily distinguished from *articulatus* by its greatly superior size, by the proportionately narrow cephalo-thoracic segment, and by the presence of two conspicuous club-shaped thickenings at the extremity of the pygidium. The puparia of the two insects also show very distinct characters, that of the present species being very thick and opaque, while *articulatus* has a filmy and transparent scale.

ASPIDIOTUS ARTOCARPI, *n. sp.*

Female puparium minute, opaque, blackish, very convex, roughened with minute dusty particles; a single exposed pellicle, centrally situate, slightly raised, dark brown with pale reddish margin, sometimes with a median whitish waxy patch. Inner surface of scale shining black, with a conspicuous whitish patch at the apex. Ventral scale adhering to the leaf, forming a conspicuous white scar surrounded by a black ring. Diameter, 0·50 to 0·75 mm.

No male scale observed.

Adult ♀ (fig. 4) yellowish; a deep lateral indentation and transverse groove behind the cephalo thorax, which has also a shallow median indentation in front. Median segments broadest. Abdominal segments well defined. Pygidium (fig. 5) with eight prominent tooth-like lobes, of which the median four are closer together than the others; second pair smallest. No marginal squames. Three small spines on each sides, one between second and third lobes, one between third and fourth, and one beyond. No circumgenital glands. Tubular spinnerets absent or obscured. There is a conspicuous thickened line across the middle of the pygidium, with two small loops above, and the ends curved downwards the extremity.

Length, about 0·60 mm.

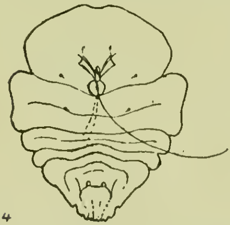


fig. 4

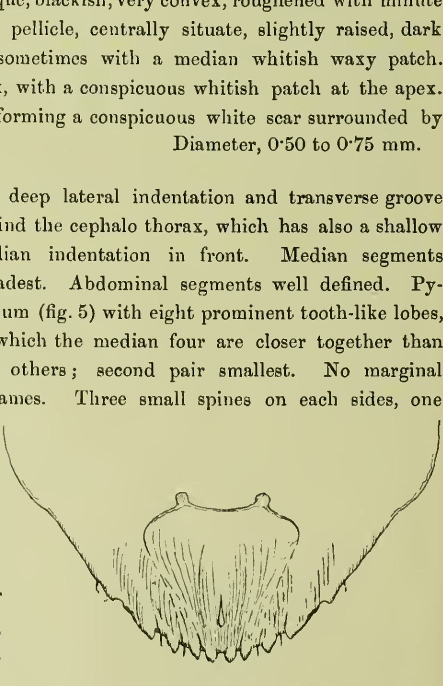


fig. 5

Habitat: on leaves of "Jak tree" (*Artocarpus integrifolia*); Bombay, India. The small black scales are ranged closely along the midrib and veins on both surfaces of the leaf. The puparium is very like that of *Aspidiotus personatus*, and leaves a similar scar after removal; but the insect itself is of a very different form, and belongs apparently to the "*articulatus*" group. The absence of circumgenital glands indicates an ovoviviparous habit.

Bearsted, Maidstone:
August 4th, 1896.

ON ARRESTED DEVELOPMENT OF PARTS IN INSECTS.

BY DR. D. SHARP, M.A., F.R.S.

It is well known that occasionally specimens of insects are found the head of which is that of a larva, while the other parts are in the imaginal state. Some time ago I published a note showing that, in a case I had observed, an abnormal combination of this kind occurred as the result of injury, before metamorphosis, to the part that remained in the larval state. Another observation I have just made leads me to extend this idea, and suggest that the mixed condition is generally, perhaps always, the result of injury to a part, which consequently dies, and does not complete the metamorphosis though the other parts do. A few days ago I gathered a head of wild parsnip to examine a larva in it (*Depressaria heracleana*, I believe), and I was surprised to find that though the larva was about full-grown it had on the head and thorax three or four eggs of a parasite. Wishing to see what would happen, I took the larva home and kept it under observation. The eggs on the head did not hatch, and so far as I could see no change took place in them; the egg on the thorax, however, commenced a process of sinking in, and became placed in a sort of depression of the surface, but did not completely disappear, and there was moisture on the surface around it. I suspected that this was a sort of intermediate condition between external and internal parasitism; but as I did not wish to interfere with the natural conditions, I did not ascertain whether there was a hatched parasitic larva beneath the partially embedded egg. Leaving it for a few days longer, I then opened the box, and was much surprised at the condition of affairs: the larva had done what it could towards pupating, viz., the abdomen had become pupal, but the head and thorax were still larval. Perhaps I ought to have allowed the natural experiment to go on, and have thus ascertained whether the parasitic larva (supposing there really was a larva) would have destroyed the organism entirely; but as the experiment was not being conducted under really natural conditions, I thought it probable all would die and rot; I therefore transferred the specimen to spirit, so that it may be seen by any one interested.

Cambridge: *July 25th*, 1896.

SUPPLEMENT TO "A SYNOPSIS OF BRITISH *PSYCHODIDÆ*."

BY THE REV. A. E. EATON, M.A., F.E.S.

(*Continued from page* 131).

SUBSECTION **A** OF THE 3RD SECTION OF PERICOMA.

Refer *ante* 2nd ser., vol. iv, 123, step 1; also *supra* p. 127.

Affinities with Subsections **B** and **E**, and partly with **D**.

Wing-markings in great measure independent, for their good definition, upon the pose of the specimen with regard to light. On nervures with ruffled hair, except on the mediastinal and axillar, the rows of bristling hair extend beyond the second or median dark transverse band and end in the light, or white, haired interval that skirts it externally; on the axillar the bristling hair ends with the nervure in the dark median fascia. The narrow dark cuspidate or halbert-shaped fascia across the extreme base of the wing is sometimes indistinct. Beneath at the wing-roots, interior to the fringes, in both sexes, the wing-nervures are beset with long, linear, stipate scales that are more or less acuminate, and are very soon succeeded by flattened hairs, followed soon in their turn by ordinary hairs.

16. PERICOMA OCELLARIS, Meigen.

||*Trichoptera ocellaris*, Meig., *Klassif. d. Zweifl., Bd. i, 44 (1804).—*Psychoda ocellaris*, Lat., Gen. Crust. et Ins., iv, 251 (1809); Meig., System. Beschr., *[ed. i], i, 105, tab. iii, 14 and 17 (1818); *id.*, *op. cit.* [ed. ii], i, 83, tab. iii, 14 and 17 (1851); Zett., Dipt. Scand., ix, 3705 (1850).—*Ps. variegata*, Macq., Dipt. N. de France, p. 167 (1826).—*Pericoma ocellaris* (Hal. MS.), Walk., Ins. Brit. Dipt., iii, 258 (1856); Schiner, Fn. Aust. Dipt., ii, 633 (1864); v. d. Wulp, Dipt. Neerland., i, 318, pl. ix, 16 [neuration] (1877); Etn., *ante*, 2nd ser., vol. iv, 124, step 2, and vol. v, pl. ii, P. 16 (details).

The inner border of the dark median fascia of the wing meets the costa subopposite the end of the axillar nervure, but is shortly recurrent in the costal fringe; from the costa it recedes obliquely to the bifurcation of the radius, then passes obliquely to the bifurcation of the pobrachial, whence it again recedes obliquely to the anal nervure subopposite its limit on the radius, and from thence runs subtransversely to the inner margin: in wings that are excessively flattened out its course to the inner margin from the radius is deeply and boldly curved. The outer border of the same fascia is transverse from the terminal white hair-spot of the subcosta to the anterior radius; on the next three nervures it is advanced rectangularly to subopposite the end of the postical nervure, and the fascia is there connected in front (by means of oblique prostrate dark hairs) with a dark space on the costa, while confluent in the usual manner, along the præbrachial nervure, with the ulterior dark markings; from thence to the anal the border recedes opposite the end of the subcosta in a slight curve, and on meeting the nervure follows it to the hind margin. Season, May to October.

Worn and faded specimens are quaint objects of a very dissipated aspect, and through abrasions of portions of the whitish hairs that terminate the rows of bristling hair, the confluence of the dark wing-markings is liable to appear more extensive than is stated above. The white space or fascia preceding the median dark fascia resembles in some specimens a rounded basal blotch ocellated by dark hairs at the end of the anterior basal cell. Zetterstedt's "var. b" may have been only the male of the species, or possibly a specimen the worst for wear. Walker mentions as characteristic of *P. ocellaris*, "a clavate appendage of the head, hid in a tuft of hair behind each eye," which is erroneus, for no such appendage exists. His cabinet in the British (Natural History) Museum seems to reveal the probable source of his mis-statement, although there is no record of the date or origin of his specimens. *Psychoda ocellaris* is there represented by nine examples in three rows—2 ♂ *Pericoma notabilis*, 1 ♂ and three ♀ *P. ocellaris*, 1 ♀ pinned and 2 ex. carded, *P. ocellaris*. Then follow, under a different MS. name, 2 ♂ *P. ocellaris*. Immediately preceding the nine first mentioned exemplars of *P. ocellaris* stand three rows of four specimens each, named *Psychoda palustris*: in the last row the first specimen and the fourth are respectively ♂ and ♀ *P. notabilis*; the other ten specimens out of the dozen comprise 2 ♂ and 4 ♀ *Ulomyia fuliginosa*, and 1 ♂ with 2 or 3 ♀ *P. nubila*. This makes it probable that the two *P. notabilis* heading the series of *ocellaris* were really intended for the following MS. label in place of the two *P. ocellaris*, and *vice versâ*; and that, through the accidental transposition of the specimens, Walker misattributed to *P. ocellaris* the thoracic air-nipples of *P. notabilis* ♂, which were mistaken by him for appendages of the head.

17. PERICOMA DALII, Etn.

P. Dalii, *ante*, 2nd ser., vol. iv, 125, and vol. v, pl. ii, P. 17 (neuration).

The dotted lines in the figure cited, and the limits of the bristling hair on wing-nervures in this species, tabulated above, are based upon the Algerian species No. VII, which has not yet been compared with Mr. Dale's insect.

Psychoda superba, Banks, "The Canadian Entomologist," xxvi, 332 (1894), appears from the description to have the facies of a

Pericoma of the 3rd Section, referable perhaps to the present Subsection.

Pericoma meridionalis, Etn., *ante*, 2nd ser., vol. v, 194 (1894), from South and South-East Africa, although it may be related to Subsection **D** of this Section, may be mentioned here with *Ps. superba*, because neither of them can be classed precisely until the positions of the endings of the ranks of bristling hair on their wings and the critical features of their ♂ antennæ are known.

SUBSECTION **B** OF THE 3RD SECTION OF PERICOMA.

Refer *supra*, p. 128.

Affinities with Subsection **A**, and in some degree with Subsection **E**. The persistent air-nipples of the male, and the extent to which the wing-nervures in this sex are squamose beneath, together with the peculiar tint of the whitish gloss diffused over parts of the tarsi, point also to relationship with the 5th Section of the genus.

Wing-markings slightly affected by change of posture; the whitish or light coloured hairs, losing their gloss, become dull and evanescent in turning about. From the radius to the postical nervure the rows of bristling hair terminate with the dark median transverse fascia, and on the axillar nervure with a dark subterminal spot; the narrow white or light haired fascia and spot that skirt these externally are formed exclusively of hairs spreading and ascending outwards; the dark hairs of the apical region lie closer to the membrane. In *P. notabilis* ♂, beneath the region of bristling hair, every wing-nervure for a considerable distance from the wing roots is densely squamate with stipate, linear scales; near the outer limits of the region these are succeeded by flattened hairs, or sessile acuminate scales, and these in their turn by ordinary hair: in the ♂ of the Algerian species No. VIII the scales are more limited in extent. In the other sex flattened hair commences near the basal cells on some of the nervures, and near the fold of deflection on others.

18. PERICOMA NOTABILIS, Etn.

P. ‡*canescens* (Hal. MS.), Walk., Ins. Brit. Dipt., iii, 258 (1856). —*P. notabilis*, Etn., *ante*, 2nd ser., vol. iv, 126, and vol. v, pl. ii, P. 18 (details).

♂. Adorned for erotic display, partly by colouration and partly by gloss. Pubescence of the head, together with the scales of the palpi and of the scape of the antennæ, deep black, "shot" with brownish-black; hair of the flagellum light, warm sepia-grey. Thoracic integument black; pubescence anteriorly white on the notum, elsewhere whitey-brown "shot" with impure whitish, but browner between the wings, where it matches in tint the browner fringes of the alulæ; prothoracic air-nipples likewise of the lighter brownish hue, contrasting with the adjacent white hair. Abdomen dorsally with pubescence concolorous with that of the neighbouring part of the thorax, but ventrally, from certain standpoints, with blackish pubescence. The dark fascia across the wing, like a curved, inverted, ill-formed γ, encloses the white spot at the end of the axillar nervure; its inner border in this sex crosses the radial branches shortly beyond the bifurcation and touches the axil of the pobrachial fork. Legs dull black or brownish-black, with glossy white scales at the apical margins of the tibiæ and of the tarsal joints; in addition, from certain standpoints, when shifted about, an impure whitish gloss overspreads the dorsa of the tarsi from the tip of the 2nd joint to the 5th (leaving in certain positions the bases of most of the joints dark), and is extended over the soles of the hinder tarsi, while on the fore-leg it is continued in front to the knee, and frosts the tibial fringes. When the fly moves about among the herbage of watery ditches, the play of light on these parts and on the head and thorax, and more especially upon the bristling hair of the wings, produces a fitful glow, like opal or phosphorous, that attracts attention.

♀. Pubescence of head, thorax and dorsum, and from certain standpoints the bristling hair of the wings, whitish-grey, shifting to a light grey and impure whitish when turned about; ventral pubescence dark grey. Scales and hair of the antennæ similar in tint to the other hair of the head; flagellum from certain positions light sepia-brown. Wings greyer than in the male; the dark fascia is broadest on the radial branches and cubitus, and in this sex its inner border crosses both of the forked nervures considerably beyond their bifurcations. The tibiæ and tarsal joints have white scales at their apical borders as in the male; but the whitish gloss is limited to the apical joint of the anterior tarsus, and can hardly be induced to spread farther than the dorsa of the last three or four joints in the hinder tarsi, the soles in most positions remaining lustreless. Season, May to July, and September.

Haliday's application of Meigen's name *canescens* (*loc. cit.*) to the present species could not be adopted, because the markings of the tarsi are unsuitable. This has already been noticed under *Pericoma* No. 9, *supra*, p. 73. Walker had several specimens variously labelled in his cabinet; but in every instance they were associated with some of other species, in a similar manner to those specified under *Pericoma* No. 16, *supra*, p. 203. *P. notabilis* was not included by Mr. Verrall in his List of British *Diptera* (1888); but the species was known to him, being well represented in his collection by specimens of earlier date from the following localities:—Lyndhurst, Hants, June, 1869; Fritton, Norfolk, June, 1881; Newmarket, Cambridgeshire, September, 1884; Burwell, Cambs., May, 1886. He subsequently met with it at Slapton, Devon, September, 1889.

It would be well to verify the species of the small insect from Chesil, in the Isle of Portland, cited in the original description of *P. notabilis*, and classed as such chiefly on account of the structure of the antennæ and other characters that are here noted as of Subsectional import. At the same time it is quite possible that the nature of the site dwarfed the specimens—a very diminutive streamlet descending the low slope above the commencement of the beach, exposed to the sea spray in storms.

Pericoma magnicornis, Van der Wulp, Dipt. Neerland., i, 319 (1877), a Dutch species, is scheduled by that author with *P. ocellaris* as having (*a*), the central cross vein at near about one-fourth of the wing's length; basal cell also very long: (*d*), wings very acute; axil of the upper fork before that of the lower fork; fringe varied with dark and light spots. But for the length of the antennæ (which in the ♂ are described as being one-third longer than the whole body), and the variegation of the wing-fringe, its identity with *P. notabilis* might have been considered probable.

SUBSECTION C OF THE 3RD SECTION OF PERICOMA.

Refer *supra*, p. 128.

In the Synopsis, *ante*, 2nd ser., vol. iv, 124, the species of this Subsection and of the next were thrown together in the line of steps 1*a*, 3, and *c*. Their separation here causes their succession to be modified. *Pericoma morula* (25), and *labeculosa* (23), according to the arrangement of the bristling hair on the wings, are the nearest in relationship to species of Subsection **B**; their similarity in facies to species of Subsection **A** of the 4th Section is only a matter of analogy. *P. consors* (22), scheduled with them under step C, c, *supra*, p. 128, approaches Subsection **B** in the character of the antennæ, but is more nearly related by wing-characters to *P. decipiens* (20), scheduled **D**, *d*. Notwithstanding their close resemblance to the species last mentioned, *P. soleata* (21) and *ambigua* (19), are nearer of kin to *P. advena* (24), scheduled **D**, *d.d.*; and the resemblance between *soleata* and *revisenda* (30), of the 4th Section, is purely superficial.

The wing-markings vary somewhat in definition and colouring with the pose of the specimen with regard to the light, and with the nature of the background to which it is opposed.

25. PERICOMA MORULA, Etn.

P. morula, *ante*, 2nd ser., vol. iv, 127, and vol. v, pl. iii, P. 25 (neuration).

Extremely similar to *P. fratercula* (26) of the next Section, but distinguishable at a glance, through the small black hair-spot at the end of the axillar nervure standing in line with those of the forks, or by the pobrachial fork being in line with the radial fork and the end of the axillar, and not exterior to the shortest line between them. These spots lie far within the limits of the bristling hair, except the first-mentioned, which is conterminous therewith. The bristling hair interior to this line of spots is longer than elsewhere, and by change of posture and illumination becomes whitish, or hoary, or flaxen-brown, while the shorter hairs either match with the remaining smoother brownish hair of the disc and fringes, or appear blackish; or, when the wing points away from the light over a dark background, the hair throughout becomes dull or glossy bronze-brown, except the further part of the costal fringe, which assumes a flaxen or impure whitish gloss, not easily lost on change of posture, but liable to spread, especially posteriorly, along the tips of the longest hairs. Beneath, at the wing-roots, in both sexes, all the nervures, including the inner border of the costa-root and the commencement of the inner margin exterior to the alula, are beset with elongate, stipate scales, succeeded for some distance by flattened hairs. Scales of the scape of the antenna brownish-black; hair of the flagellum whitish-grey. Pubescence of the body light grey, " shot " with whitish on the notum and the ♂ genitalia, and from most positions faintly yellowish-tinted on the dorsum; abdomen laterally, from a different standpoint, blackish. Legs blackish or brown-black; the tibial fringes and other hairs glossed with a lighter colour; the extreme apex of the femur and the scales at the apical margins, dorsally, of the tibia and of at least the first joint in the tarsus, glossed with light yellowish. Basal joint in the superior ♂ genital appendages relatively stout, slightly curved, and rather longer than broad; 2nd joint about twice as long, obliquely inflexed, gently curved, slenderly acuminate in its apical half. Season, May to July.

23. PERICOMA LABECULOSA, Etn.

P. labeculosa, *ante*, 2nd ser., vol. iv, 127, step 7, and vol. v, pl. iii, P. 23 (detail).

In the original diagnosis, one of the hair-spots of the wing was overlooked. There are ten small black tufts in the region of the bristling hair—two at the forks, and eight at the ends of the ranks of this hair. Beneath, at the base of the wing, in both sexes, the distribution of scales and flattened hairs is nearly the same as in *P. morula*. The colouring of the indumentum of the body, antennæ, and legs, resembles in general style of pattern that of the same species sufficiently to render unnecessary a detailed specification of slight differences in tint; the superior ♂ genital appendages are likewise similar in form. Season, July.

A single ♀ of this species, associated with a ♂ *Psychoda humeralis*, stood for *P. nubila* in Walker's collection—not owing to their being at all alike, but more through his intelligible inability to perceive any differences between them with bad lenses in the gloom of Bloomsbury, than from any other conceivable cause. It is probably, therefore, not exclusively a West of England species.

22. PERICOMA CONSORS, Etn.

P. consors, *ante*, 2nd ser., vol. iv, 126, step 6*a*, and vol. v, pl. iii, P. 22 (detail).

In the diagnosis, *loc. cit.*, the words, " some of them spreading in front " should have been enclosed within curves or brackets, as a parenthesis. With different arrangements of light from that employed for the drafting of the diagnosis, the wing (the spots excepted) is more translucent in about its basal three-fourths than in the remaining apical region, and the membrane in the intervals of the hairs gives a bluish reflection; the colour of the hair and fringes changes with the pose. The four blackish hair-spots mark the ends of ranks of bristling hair, elsewhere of a light yellowish-brown tint, that shifts to a darker brownish-grey; between these and the apical region a narrow breadth of light coloured, outward spreading hair, "shot" with whitish, intervenes, forming a subtransverse fascia, commencing at the costa a little before the end of the anterior radius, and interrupted at the smooth haired nervures. Pubescence of head and body light yellowish-brown, shifting to light flaxen-brown on the dorsum and anterior parts of the thorax, and tinted on the head and notum (especially between the wings) with pale ferrugineous. Scape of antenna concolorous with the head; flagellum (dried) piceous, with very light greyish hair. Integument of legs dark coloured or blackish-brown; their indumentum glossed on the femur, tibial fringes, apical margins of the tibia and of at least the first tarsal joint, with light flaxen-brown, which gloss can be made to extend to other parts or to disappear. Ovipositor pale testaceous or pale amber. Superior ♂ genital appendages rather similar to those of *P. ocellaris* (16); the apical joint styliform or subulate. Beneath, at the wing-roots, stipate scales are confined almost exclusively to parts of nervures within the fold of deflection, and are succeeded, for only a very short distance, by flattened hairs. Season, August.

In the net this species was distinguishable by its smallness, activity, carriage of wings (that of a *Pericoma*), light colouring, and dark spots, from other *Psychodidæ* of the locality; and the length of scape of the antenna was a noticeable feature of specimens lingering in the tube of the collecting-bottle. The spots are sometimes effaced by wear, and then the axil of the pobrachial fork being interior to the shortest line from the radial bifurcation to the end of the axillar nervure, constitutes a valuable aid in the identification of the species. The spots, from the radius to the axillar nervures, reinforced by smoother dark hair on the præbrachial and anal nervures, present, from certain standpoints, the appearance of an obtusely curved, or elbowed, narrow dark fascia.

21. PERICOMA SOLEATA (Haliday, MS.), Walker.

P. soleata, *id.*, Ins. Brit. Dipt., iii, 257 (1856); Etn., *ante*, 2nd ser., vol. iv, 126, step 6, and vol. v, pl. iii, P. 21.

With a change of illumination, the wing becomes dark greyish-brown, with glossy fringes to match, glossed at the apex of the wing with a lighter colour or whitish. The two large rounded spots of black bristling hair vary somewhat in amplitude with the tension of the wing, or the condition of the specimen, sometimes diffusedly spreading outwards to the exterior limits of the bristling hair, so as to constitute a broad interrupted and abrupt transverse dark band, but more frequently neatly defined as spots in proximity to the forks, and well within those limits; in this last case the remaining bristling hair exterior to the spots (if not deciduous) matches in colour with the smoother hair of the wing; but between the spots and the wing-roots, the bristling hair is glossed with whitish-grey from certain standpoints. Indumentum of the under-side of the wing similar to that of *P. consors* (22).

From another standpoint, all the hair of the body and wings, excepting the black spots, becomes dark brown of a warm tint. Season, May to July.

Haliday's description was from specimens in Dale's collection; therefore, from carded specimens likely to be slightly rubbed in the process of mounting. This would account for the comparatively little stress laid upon the spots. Mr. Verrall obtained a specimen at Three Bridges, Sussex, with *P. morula* and other *Psychodidæ*, on a park-paling (16, vi, 1892); and in his cabinet a ♀ from Saunders' collection (under *P. canescens*) perhaps belongs here.

In the net, *P. soleata*, *ambigua* (19), *decipiens* (20), and *revisenda* (30), are all very much alike in size and colouring, appearing blackish, with a whitish gloss on the costal fringe at the tip of the wing. In the field, therefore, it is advisible not to mix together from different stations specimens of this pattern of coloration.

Psychoda marginalis, Banks, described in "The Canadian Entomologist," xxvi, 333 (1894), may possibly be related to this Subsection.

19. PERICOMA AMBIGUA, Etn.

P. ambigua, *ante*, 2nd ser., vol. iv, 126, step 4*a*, and vol. v, pl. ii, P. 19.

Wing with rich dark brown hair, with fringes to match; the fringes with rather a talcose gloss, which in some postures is general, but is limited from other standpoints to the posterior fringe. A well-marked pencil of hair on the radio-cubital trunk or front edge of the anterior basal cell. The ranks of bristling hair become visible only under certain phases of illumination, and on the radius as far as the bifurcation the hair seems rather longer than elsewhere; by a suitable adjustment of light, the bristling hairs can be made to appear blackish, but there are no black spots by the forks or elsewhere. Beneath, in the ♂, at the base of the wing, all of the nervures and both of the margins interior to the fringes are beset with stipate elongate scales, which on most of the nervures are continued a short distance beyond the fold of deflection, but on the subcosta to a little beyond the end of the mediastinal nervure, and are succeeded by flattened hairs, followed gradually in their turn by ordinary hairs; the scales on the subcosta are distinguishable with a Coddington lens from the upper-side, when held against the light. In the ♀, scales are confined to the principal nervures interior to the fold. The ♂ genitalia conform to the same general pattern as those of the preceding species of this Subsection. Season, June and July.

The character of the indumentum of the under-side of the wing in the ♂ has much in common with that of *P. incerta* (29), of the 4th Section of this genus.

SUBSECTION D OF THE 3RD SECTION OF PERICOMA.

Refer *supra*, p. 129.

Affinities with Subsections **A** and **C** on the one hand, and with *Psychoda* on the other. The distribution of the bristling hair in the posterior half of the wing of *Psychoda* can be matched in certain species of the Subsections **A** and **D**; while in the other species of this Subsection it has the same distribution as in the species numbered 19 and 21 of Subsection **C**. The British species, *P. decipiens* (20) and *advena* (24), with No. IX of the Algerian, are of the latter category; No. X of the Algerian is of the former. In the anterior half of the wing *P. decipiens*, with the same sp. No. IX, resembles in the distribution of the bristling hair the species scheduled **C**, *c*, among which an approximation of the ending of this hair on the anterior radius to the bifurcation is noticeable in *P. consors* (22); *P. advena*, in the pattern of this character, resembles the species scheduled **C**, *c.c.*; the species No. X has no bristling hair on the subcosta, but otherwise conforms to the pattern of *Psychoda*, Section I (excluding *Ps. erminea*).

20. PERICOMA DECIPIENS, Etn.

P. decipiens, *ante*, 2nd ser., vol. iv, 126, step 5, and vol. v, pl. iii, P. 20 (detail).

Wing rich dark brown, without spots; almost facsimile of *P. ambigua* (19), and, as stated above [under *P. soleata* (21)], indistinguishable in the net therefrom; but on close inspection easily separated by the synoptical characters. In addition, the nearness to the radial bifurcation of the ending of the bristling hair on the anterior radius is a feature worth noting, marking an approach towards the elimination of this hair from the branch, actually effected in the allied Algerian species No. IX; its distance from the axil of the fork is equal to the width of the fork. The distribution of scales on the under-side of the wing-nervures in the ♂ is very nearly the same as in *P. soleata*. Season, June and July.

This is probably the *P. canescens* (Mg.) of Mr. Verrall's list of British *Diptera* (1888), three specimens, out of the five that were thus labelled in his collection, being of the present species. Of these three, one ♂ and one ♀ were from Fritton (28, vi, 1881), and a doubtful fragment, from Denmark Hill, London (1, vi, 1868); the remaining two specimens were a ♀ of indeterminable species from Rannoch (22, vi, 1870), and a *P. soleata*, ♀ ?.

24. PERICOMA ADVENA, Etn.

P. advena, *ante*, 2nd ser., vol. iv, 127, step 8, and vol. v, pl. iii, P. 24.

Referring to the original diagnosis—the rows of bristling hair, except on the mediastinal nervure, extend beyond the dark transverse band (which externally touches the bases of both of the forks, and is linked along the præbrachial nervure to the dark apical space), and beyond the dark spot on the axillar nervure, and end in the whitish fascia and whitish spot. The wing-fringes are glossed with light satiny drab, and the tuft at the base of the costa is slightly brownish at the roots of the hairs; from certain standpoints the costal fringe matches (at least in parts) with the darker portions af the disc. Beneath the wing, the scales and flattened hairs have much the same distribution as in *P. consors* (22). Legs of a uniformly light brownish colour, glossed with a lighter yellowish whitey-brown. Pubescence of the head and upper surface of the body whitey-brown, glossed with impure whitish. Superior ♂ genital appendages of a similar pattern to those of the other described species of this Section.

The specimen remains unique.

SECTION IV OF PERICOMA; British species, Nos. 26—30; Algerian, Nos. XIV, XV.

Refer *ante*, 2nd ser., vol. iv, 33, step. 6, and pp. 127—9; also vol. v, pl. iii, P. 26—30 (details).

Affinities chiefly with the preceding Section, but partly with Section V and *Psychoda*, Section II. Thus, in Subsection **A**, *Pericoma ustulata* (27) and *fratercula* (26) respectively march well in touch with *P. decipiens* (III, **D**, 20) and *ambigua* (III, **C**, 19); in Subsection **B**, *P. caliginosa* (28), and the Algerian No. XIV, scheduled † B, supply a natural link between the preceding species, *viâ* No. 26, and the subsequent species of this Section, and more generally between narrow-winged forms of *Pericoma* and the broad-winged species of Section V; *P. incerta* (29), scheduled † B.B., has closer affinity with the remaining species, Nos. XV and 30, and with *Pericoma*, III, **E**, than with Section V. Of the two species scheduled IV, **B**, ††, the Algerian No. XV, like *P. incerta* (29), approaches the Algerian No. XII, scheduled *Pericoma*, III, **E**, E.; the other, *P. revisenda* (30), while sharing the same relationship, and while leaning towards the Algerian No. XIII, scheduled *Pericoma*, III, **E**, E.E., in respect of the reduced amount of bristling hair on the pobrachial nervure, constitutes a type of *Pericoma*, approximate to *Psychoda humeralis* (6).

(*To be continued*).

Xysta (*Phasia*) *cana*, *Mgn.*, *an addition to the British list, and other Diptera.*—Curiously enough, while brushing for *Coleoptera* on May 23rd last, I found this species in my net, and sent it to Mr. Meade for confirmation. A former specimen, taken here in 1894, was too damaged to pronounce upon with certainty. I have heard of no intermediate records for Britain. May was a good month for *Tachinidæ* and *Anthomyidæ*, and several I had not seen before occurred to me, such as *Exorista albicans, Tachina* (*Chætotachina*) *rustica, Hyetodesia incana* and *Spilogaster duplicata* at Ipswich ; *Exorista vulgaris* at Eastbourne ; *E. acronyctarum* and *Degeeria collaris* (*ornata*) at Polegate, Sussex. In April I took here *Anthomyia radicum, Phorbia trichodactyla, Hylemyia variata, &c. Trigonometopus frontalis,* that curious *Heteroneurid*, was swept not uncommonly from *Sparganium* on March 23rd, among which it probably hibernated, since I took it in the same situation last autumn. Species of *Bibio* have also been unusually prevalent this year—*pomonæ, marci, leucopterus, hortulanus, anglicus, reticulatus, nigriventris* and *johannis* being generally abundant, excepting *leucopterus* and *nigriventris*, which were uncommon. —Claude Morley, Ipswich : *August*, 1896.

The Œstrid of the Indian Elephant bred.—At the meeting of the mathematical-physical class of the Imperial Academy of Sciences of Vienna, held on July 2nd, Prof. Fr. Brauer stated that he and Herr Handlirsch (with the assistance of Herr Kraus, of the Zoological Gardens at Schönbrunn) had succeeded in rearing both sexes of *Cobboldia elephantis*, which had been previously known only in the larval stage. Preliminary descriptions (generic and specific) were communicated. The larvæ live in the throat of their host (as is the case with *Pharyngobolus africanus*, Br., the host of which is the African elephant), which they leave in the early morning, change into pupæ in from one to two days, and in sixteen days from leaving the host the perfect fly appears.—Eds.

Hemiteles areator a hyperparasite ; Telenomus phalænarum on eggs of Pygæra bucephala.—In June last I collected several *Limneria vulgaris* cocoons, that were parasitic on *Gonepteryx rhamni*, and from one of them *Hemiteles areator* emerged on July 23rd. I have several times bred *H. areator*, but could not say for certain that it was a hyperparasite in any of the cases.

On July 1st I was examining oak leaves for galls, and discovered a batch of eggs of *Pygæra bucephala* ; these, however, proved to be infested with *Telenomus phalænarum.*—G. C. Bignell, 69, Union Street, Stonehouse, Plymouth : *Aug.* 18*th*, 1896.

Rare Diploptera in Dorsetshire.—The ♀ of *Vespa austriaca*, Panz. (*arborea*, Smith), has been known for many years in this country, having been taken in various localities singly, or in a few specimens, the West of England and the neighbourhood of Dublin having so far yielded the greatest number of examples ; the male, however, has not been recorded hitherto as British. The Rev. O. P. Cambridge sent me the other day some *Vespidæ*, &c., which he wanted determined, and amongst them were a ♂ and ♀ of this rare wasp. The ♂ may be known from its allies by much the same characters as the ♀ ; it belongs to the section with short cheeks and naked tibiæ, but, unlike the others of this division, has distinct black bristly hairs on the tibiæ; it has also the black haired abdomen of *rufa*, but, like the ♀, has the basal segment of the abdomen distinctly longer than in that species. Further search will be made for it by its captor, as he believes he took it on *Umbelliferæ* about September.

Mr. Cambridge has also given me leave to record the capture of a specimen of *Odynerus basalis*, Smith, taken by him on Bloxworth Heath some years ago, running about at the roots of heather, &c. As this locality is some miles from the others already known for this great rarity, I thought it ought to be put on record.—Edward Saunders, St. Ann's, Woking: *August* 17*th*, 1896.

Capture of the ♂ and ♀ of Crabro pubescens, Shuck.—Having recently taken both sexes of *Crabro pubescens* at Brickett Wood, near St. Albans, it may be worth while, in addition to recording the locality of the capture, to put before your readers a description of the ♀, which I understand has not previously been met with in this country, and which so closely, at first sight, resembles the ♀ of *C. leucostoma*, that when met with it might, unless carefully examined, be thrown aside. For this reason a comparison with the latter will be all that is necessary for its identification.

The female of *pubescens* is a more slender insect than the female of *leucostoma*, and in outline is not unlike the male of the latter; the head and mesothorax are much more closely and evenly punctured, the head is not hollowed out beside the central furrow, there is a more or less conspicuous pale blotch at the base of the hinder tibiæ, the red ring at the base of the hinder tarsi is scarcely discernible, and there is also a yellow line on the scape of the antennæ.—A. Piffard, Felden, Boxmoor, Herts.; *August* 18*th*, 1896.

[This is a most interesting capture, and the likeness of the ♀ to small *leucostoma* is, as Mr. Piffard points out, very great; the characters he gives, however, if always constant, are sufficient to distinguish it at once from the common species.—E. S.].

Oliarus leporinus, Linn., in the New Forest.—The two British species of the Homopterous genus *Oliarus* are both rare in this country, but I have had the good fortune to find *O. Panzeri* (formerly called *leporinus*) in several localities, and last year met with it in tolerable abundance at Sea View in the Isle of Wight. *O. leporinus* (= *pallidus*, olim), however, has, I believe, only been hitherto recorded from Clifton, Lulworth, and Ryde, and it was therefore with great pleasure that I secured a specimen whilst collecting at Lyndhurst with the Rev. H. S. Gorham on June 24th. It was found by sweeping in a somewhat wet locality about a mile and a half from Lyndhurst Road Station; the herbage consisted chiefly of *Myrica gale*, but there were numbers of other plants growing with it. I only found a single example, but even in the sweeping-net one could see it looked different to the ordinary *Panzeri*, and the long vertex of its head betrayed it at once. I sought in vain for other specimens, so could form no idea of its food-plant; very likely, however, it does not keep constant to one, as *Panzeri* occurred at Sea View by beating oaks, by sweeping *Umbelliferæ* in an open field, and also frequently by casual sweeping away from oaks and, so far as I could make out, from *Umbelliferæ* also.—Edward Saunders, St. Ann's, Woking: *August* 10*th*, 1896.

Deilephila livornica and Triphæna subsequa at Hartlepool.—A collector here, Mr. J. N. Lumsden, has just brought me for inspection a specimen of *Deilephila livornica*, which was taken at the Central Marine Engine Works here (where it had doubtless been attracted by the electric light) on July 15th last; it is a perfect specimen, but somewhat rubbed on the wings. I was fortunate in taking a specimen of *Triphæna subsequa* at Hesleden Dene at sugar, or at rush flowers, I am not quite certain which, on July 25th last. This, so far as I am able to ascertain, is the only record for the Counties of Durham and Northumberland.—J. GARDNER, 6, Friar Terrace, Hartlepool: *August* 12*th*, 1896.

Tinea vinculella, H.-S.—As the distribution of this species in the British Islands is attracting attention, it seems worth while to refer to Ent. Mo. Mag., xv (1878), p. 88, where Mr. Stainton records a *Tinea* "allied to *argentimaculella*," taken by me at Scilly about the beginning of August, 1877. I gave Mr. Stainton the best of the specimens. They will almost certainly prove to be *vinculella*.—FRANCIS JENKINSON, 10, Brookside, Cambridge: *August* 1*st*, 1896.

Telephorus paludosus and Rhagonycha unicolor in Lancashire.—On five afternoons in June and July I visited Ringley Wood, Lancashire, a locality I had not previously worked for *Coleoptera*. Ringley Wood is situated about seven miles to the north-west of Manchester, on the north side of the Irwell Valley. A railway runs through the wood, and although several collieries are close to it, the trees (oak, alder and willow) have not suffered; the flora is rich, and the stream running through the wood is pure. My most interesting captures were a series of *Telephorus paludosus* and a single specimen of *Rhagonycha unicolor*. The former species occurred in a limited area (a few yards in extent) of moist ground covered by long sedgy grass, from which it was swept. In no other part of the wood did the species occur. By thoroughly sweeping this area on June 5th, 12th and 13th, about twenty specimens were obtained on each afternoon, but on June 20th, and again on July 7th, not one was to be met with. Together with this species from the same spot occurred the single example of *Rhagonycha unicolor*, several *Telephorus lituratus*, *T. hæmorrhoidalis*, *Rhagonycha testacea*, *R. limbata*, *Anthobium torquatum*, various *Cyphons*, a few *Helodes minuta*, *H. marginata*, and a few *Anthicus floralis*. Amongst other species obtained in Ringley Wood were single examples of *Liophlœus nubilus*, *Cassida viridis*, *Micropeplus margaritæ*, *Dryocœtes villosus*, and *Antherophagus pallens*; by beating oak a few specimens of *Athous niger* and *Corymbites quercûs*, v. *ochropterus*; by sweeping *Equisetum* a few *Grypidius equiseti* and a series of *Hippuriphila Modeeri*, and in *Boleti* on a dead tree trunk half a dozen specimens of *Liodes humeralis* were taken.

Telephorus paludosus is recorded in Fowler's "British *Coleoptera*" as having been taken by Mr. Chappell at Glossop, in Derbyshire, thirteen miles from Manchester; there does not appear to be a record of its occurrence in Lancashire. *Rhagonycha unicolor* is recorded in Fowler's work from Marple, in Cheshire, and in Mr. Cosmo Melvill's list drawn up for the British Association Handbook for 1887 it is mentioned as having occurred once only at Bowdon, in Cheshire. Both Bowdon and Marple are within fifteen miles radius from Manchester.

I shall be pleased to send types of the *Telephorus paludosus* to collectors requiring the species.—J. HAROLD BAILEY, 128, Broad Street, Pendleton: *August 5th*, 1896.

Obituary.

Miss Georgiana Elizabeth Ormerod, F.E.S., died at St. Albans, Herts, on August 19th, aged 73. She was the second daughter of the late George Ormerod, D.C.L., and elder surviving sister of Miss Eleanor A. Ormerod, the well known writer on Economic Entomology, whom she largely assisted in her investigations, and in furnishing many illustrations, for she was an accomplished artist. The survivor of the two sisters has our sincere sympathy and condolence. Miss G. E. Ormerod was elected a Fellow of the Entomological Society of London in 1880.

Society.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *July 9th*, 1896.—C. G. BARRETT, Esq., F.E.S., Vice-President, in the Chair.

Mr. R. Adkin exhibited a short bred series of *Dianthœcia nana* (*conspersa*), from larvæ taken in Hoy; they were all dark in colour, midway between the Shetland and Scottish mainland forms; also a series of *D. capsincola* from the same locality, showing no variation from the usual English form. Mr. Auld, series of varieties of *Abraxas grossulariata* bred this year; one specimen was of a unique form, the basal half of each wing being curiously streaked, while the outer half was quite normal, on the hind-wings the streaks were very irregular in length. Mr. Turner, series and life-histories of the following species of *Coleophora*—*C. lineolea* from Brockley and Lewisham, *C. albitarsella* from Lewisham, *C. palliatella* from Epping Forest, *C. laricella* and *C. fuscedinella* from Carlisle; the latter species showed the young curved cases, which are abandoned early and new straight ones made; also living pupæ of *Gonepteryx rhamni* from Byfleet. Mr. Lucas, bred specimens and pupa skins of the local dragon-fly, *Erythromma Naias* from Byfleet. Mr. Enock, a living specimen of the very rare male of *Prestwichia aquatica*, which, with the assistance of Messrs. Dennis and Scarfield, he had discovered in a pond in Epping Forest; it had only the merest rudiments of wings; he much doubted the statement that the species was parasitic on the eggs of dragon-flies, the ovipositor seemed too strong and too long. He suggested that the ova were deposited in some aquatic larvæ.

July 23rd, 1896.—T. W. HALL, Esq., F.E.S., Vice-President, in the Chair.

Mr. West (Streatham) exhibited specimens of *Catocala promissa* and *C. sponsa*, bred from larvæ taken during the Society's Field Meeting at Whitsuntide. Mr. Robt. Adkin, a bred series of a *Hypsipetes*, bred from larvæ taken in Orkney by Mr. McArthur. He was unable to say whether they were *H. trifasciata* or. *H ruberata*, although he was inclined to think they were referable to the latter species. He also exhibited a specimen of *Cœnonympha Pamphilus*, with the row of ocelli on under-side very well developed. Mr. Dennis, a series of *Cupido minima*, taken at

Horsley, showing a complete gradation in the number and development of the spots on the under-side, and also one upper-side well scaled with blue. Mr. Fremlin, specimens of *Polyommatus Astrarche* v. *Salmacis*, from Castle Eden Dene. Mr. Mansbridge, varieties of *Abraxas grossulariata* bred from larvæ obtained at Horsforth. Out of 150 larvæ two or three per cent. only showed a more than ordinary variation, compared with some fifteen per cent. last year from the same locality. Two specimens were asymmetrical, and one was a nicely radiate form. Mr. West (Greenwich) exhibited specimens of the Hemipteron, *Dicyphus epilobii* from Eltham. Mr. Moore, a specimen of the second brood of *Cyaniris Argiolus*, taken on July 12th at Oxshott, and also a specimen of *Plebeius Ægon*, destitute of the row of fulvous blotches on the upper surface, and one having confluent spots on the under-side. Mr. Robt. Adkin contributed a paper, entitled, "Notes and Observations made during the Society's Field Meeting at Chalfont Road, on July 18th, 1896."

August 13*th*, 1896.—C. G. BARRETT, Esq , F.E.S., Vice-President, in the Chair.

Mr. S. Stevens exhibited an unusually small specimen of *Papilio Machaon*, having the black band on the hind-wings very narrow. Mr. R. Adkin, a bred series of *Pachnobia hyperborea*, from pupæ taken at Rannoch. Mr. McArthur, a preserved larva of the same species, mounted on a twig of its food-plant (*Empetrum nigrum*), the crowberry, and gave interesting details as to its life-history. Mr. Fremlin, a series of *Phigalia pedaria* from Saltash, including the dark reticulated form and the very dark uniform variety. Mr. H. Moore, numerous interesting insects from South Africa, including a fine specimen of *Actias mimosæ*, which, from its sluggish habits, can be easily picked off the bushes, its larvæ are more or less gregarious ; several species of the larger *Orthoptera*, *Pachytylus pardalinus*, the locust which often appears in vast numbers, and does considerable damage ; *P. peregrinus*, which is the locust of North Africa ; *Cyrtacanthus purpurifer*, a very large species ; *Acheta africana*, a cricket from Johannesburg ; and numerous species of *Coleoptera*, which are attracted in thousands by the electric light in Pretoria. Mr. Sauzé, a specimen of *Cicadetta montana*, one of three taken by Mr. Heasler in Surrey. Mr. Heasler had been attracted to some oak trees by an unusual stridulation, and eventually succeeded in obtaining these three examples. Mr. West, of Greenwich, a series of the local Hemipteron, *Eurygaster maura* from Folkestone. Mr. Mansbridge, a double cocoon of *Clisiocampa neustria*, from which, although the imagines had emerged from the pupa cases, they had been unable to extricate themselves ; when cut open there was only one cavity partially divided into two. Mr. Barrett exhibited four British specimens of *Plusia ni*, two belonging to Mr. Jeffrey and two to Mr. C. A. Briggs ; one of the former was captured in Surrey ; also from Mr. Jeffrey a fine variety of *Cleoceris viminalis*, having the basal half of the fore-wings very dark in contrast to the very pale outer portion ; and a remarkable form of *Agrotis exclamationis*, in which neither of the stigmata was developed, but the elbowed and basal lines were very distinct and perfect on the uniformly pale brown ground-colour. A discussion took place on the season, with special reference to *Colias Edusa* and the means of migration of insects. Messrs. Stevens, McArthur, Adkin, Barrett, Mansbridge, Winkley, and others taking part.—HY. J. TURNER, *Hon. Secretary.*

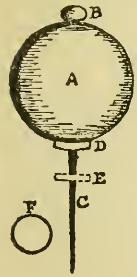
SUGGESTIONS RESPECTING THE USE OF ALBO-CARBON (IMPURE NAPHTHALINE).

BY H. GUARD KNAGGS, M.D., F.L.S.

The cheap albo-carbon, though less volatile and consequently less powerful than the purer naphthaline as a preventive of mites and *Anthreni*, seems, nevertheless, to fulfil the requirements of the more costly article, and indeed, from certain points of view, to possess advantages over the latter.

Being less, but still sufficiently, volatile, it is more lasting, and requires less frequent renewal——no small gain in the case of a large collection; for the same reason it suffers less loss when liquefied for casting, moreover, it is manufactured in a spherical shape admirably adapted for making "balls."

How to make naphthaline "balls."—Materials: a pound of spherical albo-carbon, four penny boxes of bead-headed, inch-and-a-half (or other lengths if required) steel toilet pins (with a drill of slightly less thickness than the pins), discs punched from stout paper, and a little varnish; these, according to cookery book diction, should cost about sevenpence, and be sufficient to make a gross. Mode: drill through the axis (at broken-off ends) of an albo-carbon sphere A, then push in a pin B C, pick up a paper disc F on the pin point, and drive the pin through a piece of cork till the disc rests at about E, then touch with varnish the part of the pin between A and E, and also the upper surface of E, push the disc home to D, and the "ball" is ready for use.



For cabinets, especially such as are provided with camphor cells, I would suggest that, as even albo-carbon, when broken up, is unnecessarily volatile, it would be a better plan to cast oblong slabs to fit the cavities; doubtless, if a sufficient demand were created, the "Albo-Carbon Company" would be willing to turn out their commodity in this form; if not, the stuff may be broken up, put into a Florence flask, melted under boiling water, and poured into suitable moulds, care being taken to keep the fumes away from flames. To avoid accidents it is advisable to conduct this operation on a gas stove under a chimney.

One more note respecting the effect of albo-carbon vapour on specimens. I find that some *Scopariæ* which were placed in it in a closely stopped bottle many months ago have *not faded in the least degree*. Not only that, but these specimens, which were for a long time very greasy, now appear to have parted with the whole of their grease, which has no doubt become absorbed into the vapour——gone "afay in de Ewigkeit."

Camden Road, London:
September, 1896.

[In this country most of the large private collections of exotic insects (and some "British") are kept wholly in boxes with no "cells." In such cases these naphthaline "balls" are invaluable. I am a firm believer in naphthaline as superior to camphor; some 200 "balls" are always in use in my boxes (and in some drawers), and every receptacle for woollen articles in the house is saturated with the fumes of the sublimated form. But the use of naphthaline may be carried too far. A short time ago I saw a cabinet in a certain Museum containing a very valuable type collection of *Coleoptera*. It had become infested with mites, and the late Curator had filled the cells with naphthaline and pasted paper over the sutures formed by the covers. He died, and the condition of affairs was undiscovered for several years. It was then found that the glass covers were rendered opaque by an unctuous deposit on the under-side, which no doubt mainly consisted of albo-carbon: I leave the question of "grease" for confirmation. No deposit was noticeable on the beetles.—R. McLachlan].

NEW NORTH AMERICAN BEES.

BY T. D. A. COCKERELL, F.E.S.

Prosapis Schwarzii, *n. sp.*

♀. Length, 8 mm., stout, black with very pale yellow markings. Head longer than broad; punctures of front strong and very close, those of vertex and occiput less so; an elevated flattened area between the antennæ, longitudinally grooved; clypeus long, with the sides nearly parallel, granular, with large sparse shallow punctures; mandibles wholly dark; sides of face narrowly very pale yellow, the yellow extending upwards only as far as level of antennæ, and at its broadest not half the breadth of the distance between the antennæ. Antennæ wholly dark, scape rugulose, cylindrical, not at all dilated; 2nd joint of flagellum shorter than 1st or 3rd. Very little pubescence on head, some white hairs near the antennæ and on occiput and cheeks. Thorax virtually bare, except sparse white pubescence on pleura, a fringe along hind border of postscutellum, failing in the middle, and a conspicuous fringe along lateral edges of metathorax. The basin of the metathorax is hoary with appressed pubescence. The tubercles have a pale fringe. Prothorax all black, except a yellow patch (without any dark dot) on tubercles; tegulæ wholly dark. Mesothorax and scutellum minutely granular, with large and very close but not confluent punctures; pleura with the punctures more or less confluent; postscutellum with shallow punctures; enclosed area of metathorax shining, irregularly rugulose, laterally with pits, causing it to be subcancellate. Wings hyaline at bases, otherwise fuliginous, including the first discoidal cell; a hyaline line runs from base of stigma diagonally across the 1st submarginal, across 2nd submarginal at its lowest part, and a little beyond; another hyaline line starts in 1st discoidal below the basal angle of

1st submarginal, and runs to a point just below the termination of the 1st recurrent nervure, thence bifurcating, the arms at first rapidly diverging, then running parallel or nearly so to beyond the 2nd recurrent nervure. 2nd submarginal cell long, narrowed, less than one-half to marginal. Legs wholly black, except an inconspicuous reddish streak on anterior tibiæ, and the clear yellowish-white basal third of hind tibiæ; spines pallid; claws rufescent, rather deeply bifid. Abdomen smooth and very shiny, its hindmost half with a fine sericeous pile; dorsum of first segment wholly impunctate.

'*Hab.:* Dade Co., Florida (E. A. Schwarz; U. S. N. M., No. 19113).

In its large size, this agrees only with *basalis*, to which it is not nearly related. Its affinity is with *confluens*, Smith, which also occurs in Florida, but that is smaller, and differs in the punctuation of the thorax and the colour of the legs.

CALLIOPSIS SEMIRUFUS, *n. sp.*

♀. Length, 10 mm., head and thorax black, abdomen bright rufous, the whole insect shining, pubescence greyish. Head broader than long, front with a median groove, punctures sparse throughout; antennæ short, black, with the last six joints of the flagellum beneath wholly, and the others more or less, rufous; scape long. Head tolerably hairy, the hairs rather long, but not dense enough (except on cheeks) to hide the surface. Anterior margin of clypeus with shining rufous hairs. Clypeus broad and low, reaching to bases of mandibles; labrum prominent, with a transverse ridge; mandibles stout, beset with long hairs, rufous towards tips, with a cream-coloured patch near base. Tip of glossa acute, not bristly. Ocelli placed in a curve. The pale face-markings are cream colour, and consist of a large irregularly triangular patch constituting the lateral extension of the clypeus on each side, a small spot at the angle between the clypeus and the orbit, a semilunar supraclypeal mark, and triangular dog-ear marks. Thorax with the pubescence sparse, except on pleura and sides of metathorax. Tegulæ shining testaceous, with a cream-coloured spot; tubercles wholly dark. Punctures of mesothorax and scutellum extremely sparse; scutellum not bilobed. Margins of postscutellum very hairy. Base of metathorax shining, bare, impunctate, with a shallow median depression. Wings hyaline, the extreme apex with a small fuscous cloud, nervures and stigma sepia-brown. Stigma excessively narrow, almost obsolete, much as in *Perdita latior*; marginal cell long, rather obliquely truncate and minutely appendiculate at tip; second submarginal long, narrowed one-half to marginal, receiving the recurrent nervures at the end of its first and the beginning of its last fifths. Legs black, a small yellowish spot at base of four anterior tibiæ, hairs on tarsi shining brownish. Abdomen shining rufous, more or less hairy at sides, and especially tip, dorsum of first segment impunctate, venter nearly all black.

Hab.: Las Cruces, N. M., on *Sphæralcea angustifolia* in the garden of my house, August 25th, 1895.

Allied to *C. abdominalis*, Cr., but differs by the clear wings, dark tubercles, &c.

This species differs from true *Calliopsis* somewhat as *Macrotera* differs from *Perdita* s. str., and should perhaps fall with *abdominalis* into a distinct genus. At one time I thought it might be a *Scrapter*, but that was surely an error.

ANDRENA CERASIFOLII, *n. sp.*

♂. Length, 10 mm. or a little over, head black, thorax and abdomen Prussian-blue, tegulæ shining piceous, legs black, antennæ wholly black; wings hyaline, minutely hairy, apex slightly clouded, nervures and stigma piceous, the latter dark rufescent in middle. Pubescence of head and thorax tolerably long and dense, more sparse on dorsum of mesothorax and vertex, pale grey, mostly black on hindmost half of metathorax, or scutellum and dorsum of mesothorax; entirely black also on clypeus, sides of face and about the antennæ, black hairs also on the anterior part of occiput. The pubescence of the cheeks, and of the middle of the face below the antennæ, is dull white. Abdomen shining, pubescence white, sparse, mainly confined to first segments, sides of the others, and venter. There is some short black pubescence on the hindmost halves of the segments dorsally, only noticed when the insect is viewed from the side. Pubescence of legs rather short, dirty white, and longest on femora, more or less mixed with darker on tibiæ and tarsi. The hairs on hind femora are clear shining white. Head broader than long, eyes small, distance between the ocelli less than the diameter of the middle one. Clypeus more or less bluish. Face and front strongly and closely punctured, punctures of clypeus just as close in middle as at the sides; labrum shining, prominent, with a central pit, lower margin of labrum fringed with reddish hairs. Second joint of flagellum barely shorter than third. Mesothorax and scutellum with large, comparatively sparse, punctures; metathorax black, strongly rugulose or subcancellate, enclosed area not bounded by a distinct rim, and sculptured much as the rest. Second submarginal cell very short, higher than broad; third narrowing more than half to marginal. Abdomen strongly and closely punctured, the apical margins of the segments somewhat constricted.

Hab.: Santa Fé, N. M., on foliage of cherry in Mr. Boyle's garden, morning of July 10th, 1895 (Ckll., 3432). Seven others taken at the same time and place, flying round and settling on the foliage of a peach tree; all were males. In one the wings are slightly dusky throughout. One specimen of this species was taken on July 8th, 1894, at Sta. Fé (Boyle).

This differs at once from *A. cærulea*, Sm., by the colour of the pubescence on the face, the punctured abdomen, &c. Using the table given by Schmiedeknecht for the European species, it comes in the neighbourhood of *A. pilipes*, Fl.

PERDITA IGNOTA, *n. sp.*

♀. Length, about 5 mm., head and thorax dark blue-green, tolerably hairy, supraclypeal area brassy. Head of ordinary size, face and front shining, front with very sparse punctures; clypeus, except the usual dots, and nearly circular lateral marks, white. External bases of mandibles white or whitish. Scape yellowish on one side, flagellum dull orange beneath. Cheeks hairy. Mesothorax minutely rugulose but shiny, with short white hairs; metathorax shiny, nude, except the fringe of hairs at the side. Tubercles and hind border of prothorax with a very little white. Tegulæ very pale. Wings hyaline, iridescent. Nervures and stigma colourless, 3rd discoidal distinct, marginal cell with the substigmatal portion about as long as, or a little longer than, the poststigmatal. A stripe on anterior tibiæ in front, and all the tarsi entirely, white. Abdomen piceous, with interrupted white bands on segments 2 to 4, that on 4 reduced to a couple of small streaks. Pygidium orange. Venter piceous.

Hab.: on *Aster spinosus*, Mesilla, New Mexico, June 24th, 1896.

In Proc. Phila. Acad., 1896, p. 38, I remarked that *A. spinosus* had produced no *Perdita*. Whether the present insect is attached especially to that plant, or merely a stray from some other, may be doubtful, as repeated sweepings failed to bring to light more than a single specimen.

In my table of *Perdita* (t. c.) this will fall next to *pectidis*, from which it will easily be known by the white clypeus, the straight instead of oblique abdominal marks, &c.

I had asked myself whether this might be the unknown ♀ of *P. erigeronis*, but it differs from that species by its white instead of yellow marks, its clear wings with the nervures not dark, its much more shiny mesothorax, and its shiny front, the front in *erigeronis* being dull.

Mesilla, New Mexico, U. S. A.:
July, 1896.

GUM ARABIC *versus* TRAGACANTH FOR CARDING INSECTS.

BY G. C. CHAMPION, F.Z.S.

Why do many of our British Entomologists use tragacanth for carding small *Coleoptera*, *Hemiptera*, &c., in preference to any other gum? The insoluble property of this "detestable material," as Mr. Blandford aptly describes it,[*] is so well known that it is needless to speak of it here. Some of us who have had to relax large numbers of fragile specimens that have been mounted with tragacanth have seen the error of our way and abandoned the use of it long ago. Is it necessary that the British Coleopterist or Hemipterist should have a method of his own, like the British Lepidopterist, to distinguish his specimens from continental ones? Neither continental nor American Entomologists use tragacanth, though the Englishman abroad may do so. If some of our rising Entomologists cannot be persuaded to abandon the use of tragacanth altogether, they could sometimes use it much more sparingly, so that insects carded with it do not appear buried in a pulpy mess when placed for a short time in the relaxing box. I use gum arabic, mixed with a little loaf sugar to give consistency and prevent cracking, and an infinitesimal quantity of carbolic acid (mixed with a small amount of spirit) to keep it from turning mouldy. It should be made of such a consistence that it will just pour from the bottle. A preparation of this kind has been used by Dr. Sharp and myself for years, and we are quite satisfied with it. Even if tragacanth be used, a stronger gum is often required for the bodies of many *Histeridæ*, *Staphylinidæ*, &c., and this latter might just as well be used for the legs and antennæ as well. The objection, of course, to many is that the gum tragacanth, no matter how much is used, is invisible when dry, whereas the preparation of gum arabic leaves a conspicuous mark on the card. But this by no means follows, as with a brush and a little cold water, or better still the mouth, the superfluous portion of it can be washed away at the time. Moreover, the card does not discolour so rapidly as with tragacanth, for the gum placed under the femora and tibiæ is very often quite unnecessary. If the gum arabic is put on in streaks with a brush or piece of fine wire, and the body placed on this for a few moments, the antennæ and legs can then be extended if required and gummed down separately. It is often much easier, too, to mount many wiry-legged beetles in this way than with tragacanth. For floating off specimens carded with tragacanth the best method is to place them for a few hours in a very slightly damped relaxing-box (instead of immersing in water, as is usually done), and they can then be lifted off the card before the gum has developed its objectionable property of absorbing moisture to an indefinite extent.

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[*] Ent. Mo. Mag., xxxii, p. 63.

Dr. Sharp's recipe for the preparation of gum arabic, known as Leprieur's gum, is as follows:—best gum arabic 60 parts, loaf sugar 30 parts, strong spirits of wine 8 parts, and purified carbolic acid 2 parts. Dissolve the gum and the sugar separately in as little water as possible, and then mix thoroughly together. Dissolve the carbolic acid in the spirit and add it drop by drop to the larger mixture, stirring thoroughly while doing so.

Unfortunately, none of our dealers sell a preparation of the kind described, or perhaps some of the rising generation might be tempted to buy it.

Horsell, Woking:
September 3rd, 1896.

NOTES ON *COCCIDÆ.*

BY W. M. MASKELL.

CHIONASPIS ASPIDISTRÆ and CHIONASPIS BRASILIENSIS.

In the number of this Magazine for March, 1896 (p. 60), Mr. Newstead has some remarks upon these two species. After observing that the type of *C. brasiliensis* is not in the Signoret collection at Vienna, he concludes that certain specimens from a greenhouse which he had thought belonged to that species were really *C. aspidistræ*; further, that Mr. Green also thinks the two identical; and, lastly, that probably my Australian *brasiliensis* will also turn out to be *aspidistræ.*

In 1891 I reported (Indian Museum Notes, vol ii, p. 17) *C. aspidistræ* in India, and the drawing which accompanies my remarks, and which was taken from one of the specimens then sent me (and now in one of my slides) very fairly represents the peculiar form of the insect, a form which Signoret specially dwells on in his diagnosis of the species. I am perfectly confident of the correctness of my identification as regards *C. aspidistræ.*

In 1892 (Trans. New Zealand Inst., vol. xxv, p. 210) I identified specimens received from both Ceylon and Australia as *C. brasiliensis.* It is presumable that these Cingalese insects are the ones which Mr. Green now takes to be *C. aspidistræ.* None of those sent to me from either country exhibited the peculiar form of *aspidistræ* alluded to just now.

Mr. Newstead's note has induced me to again examine and compare my specimens, and the following is the result. In the absence of type specimens of *brasiliensis* we are reduced to the published descriptions of Signoret; and I may say that I find these quite borne out by observation of the insects in my cabinet. The characters noticeable are:—

C. ASPIDISTRÆ.	C. BRASILIENSIS.
♀ puparium exceedingly thin and papery.	♀ puparium more solid.
♂ puparium snow-white, tricarinate.	♂ puparium snow-white, tricarinate.
1st ♀ pellicle equal to about $\frac{1}{7}$ of the puparium.	1st ♀ pellicle equal to about $\frac{1}{6}$ of the puparium.
2nd ♀ pellicle reaching to about $\frac{1}{3}$ of the puparium.	2nd ♀ pellicle scarcely reaching to $\frac{1}{5}$ of the puparium.
Adult ♀ with excessively conspicuous protruding segments.	Adult ♀ with not more than ordinary segments.

The termination of the abdomen with its lobes and hairs, and the groups of "spinnerets," do not appreciably vary in the two.

The result of my further enquiry is to make me conclude that both of these are *variations* of one species; and as both were originally described by the same author in the same year, I suppose that we must take them alphabetically, and make *brasiliensis* a var. of *aspidistræ*.

The reason why I agree to combine them in one species is because the pygidium and the terminal lobes are practically identical. The reason why they seem to be varieties is because the texture of the puparium, the relative proportions of the pellicles, and especially the segments of the body, differ in the two.

In 1893 Mr. Green sent me from Ceylon a form which he proposed to name *C. mussændæ*. He accepted my suggestion that this was a var. of *aspidistræ*. The body has the characteristic disproportionate segments, but the terminal lobes differ slightly from the type. It seems, therefore, that the species has two well-marked varieties. But, on the whole, it is not as yet possible for me to abandon *brasiliensis* altogether; and indeed there is much convenience, as it seems to me, in recognising the variations of species, when these variations affect at least more than one character.

ARTICULATION IN ANTENNAL JOINTS OF THE MALES OF SOME SPECIES.

In the same number of the Magazine (page 57) Mr. Newstead describes the male of *Ripersia fraxini* (the apterous form), and mentions and figures an articulation of the 3rd joint with "a structure like a ball-and-socket joint," remarking that this character has not been hitherto observed in the *Coccidæ*.

The figure of this apterous form reminded me so much of the apterous male of *Eriococcus hoheriæ*, Mask., described in Trans. N. Z. Inst., vol. xxiv, 1891, p. 26, and plate iv, that I have re-examined my specimen of that insect and find that a similar articulation is distinctly visible in its antenna. I ought, indeed, to have noted the point at the time. However, the fact has induced me to examine a number of male Coccids and their antennæ, with the result that I find the articulation present in several, but by no means a constant character. It is exhibited in the following species in my cabinet:—

Chionaspis salicis,* winged form, obscurely; apterous form, clearly.
Fiorinia stricta,* obscurely; *F. asteliæ*,* obscurely.
Ctenochiton elæocarpi,* obscurely.
Solenophora corokiæ,* obscurely.
Planchonia stypheliæ,* obscurely.
Eriococcus hoheriæ, apterous form, clearly; *E. danthoniæ*, clearly.
Dactylopius herbicolæ, clearly; *D. ericicola*,* obscurely; *D. albizziæ*, clearly.

Lachnodius eucalypti,* obscurely.
Ripersia leptospermi, clearly.
Sphærococcus leptospermi, clearly.
Frenchia semiocculta,* obscurely.

In the cases marked * the third joint is distinctly narrowed at the base, as shown in Mr. Newstead's figure 2; but I have not been able to make out with certainty the socket in the 2nd joint, the specimens not having been mounted with a view to such a character. Probably, however, the socket exists.

My specimens of *Leachia zealandica*, both winged and apterous, show no articulation; and I cannot detect it in any specimens which I have of the Monophlebid or the Brachyscelid groups.

LECANIUM MINIMUM, Newstead.

A few weeks ago I received from Mr. C. P. Lounsbury, of Cape Town, some insects on *Pinus insignis*, which are very near to the species described under the above name in this Magazine, May, 1892, p. 141. Although extremely small, they are clearly adult; and whilst not absolutely identical with the type, they are so close that I shall only consider them a variety, differing principally in the absence of a dermal tessellation. Their slightly convex form appears to be due to the extreme slenderness of the pine needles.

DISTRIBUTION OF *COCCIDÆ*.

As the years go on, and the collection and study of Coccids increase, new localities and food-plants are constantly to be noted for species already described. In my paper for 1895, lately published in the Trans. New Zealand Inst., vol. xxviii, I have mentioned several instances, as, for example, *Aspid. cladii*, *Planchonia quercicola*, &c.; and during this year several others have already come under my notice. So far, I have the following:—

Aspidiotus dictyospermi,* Morgan, India, on tea; *A. articulatus*,* Morgan, Cape of Good Hope, on Celastrus.

Diaspis geranii, Green, MS., Hong Kong, on geranium; *D. cacti*, Comstock, India, on prickly pear.

Parlatoria zizyphi, Lucas, Hong Kong, on orange.

Planchonia bryoides,* Maskell, Australia, on Exocarpus.

Eriococcus paradoxus, Maskell, India, on Helicteres.

Dactylopius ceriferus, Newstead, China, &c., on Psidium.

Coccus cacti, var. *ceylonicus*, Green, India, on prickly pear.

Those marked * exhibit slight variations not sufficient to raise them to species.

Also I have a *Monophlebus* from Japan, on *Pinus*, which I believe to be *M. Burmeisteri*, Westwood, originally from Java. Hitherto only the male of this has been known; I have now both male and female. Possibly it may be necessary later on to separate this from Westwood's species.

The Genus CYLINDROCOCCUS.

I have been favoured with a copy of a paper by Herr E. H. Rübsaamen, published in the Berlin Entomolog. Zeitschrift, 1894, dealing with certain Australian gall-insects. At a future time I propose to treat specially of this production, and only take this opportunity of observing that it appears to raise a large amount of very positive dicta upon a very small basis of acquaintance, not only with the *Coccidæ*, but with all that has been published about them. It is entirely impossible for me to accept this author's proposal to turn my *Cylindrococcus casuarinæ* into a new genus and species under the name *Crocidocysta Froggatti*; and I regret that when he began to think of so doing, he did not see fit to communicate his ideas previously to me.

Wellington, New Zealand:
July 11*th*, 1896.

Colias in 1896.—As yet the genus *Colias* has been very poorly represented here this season, the cool and generally ungenial weather of August having perhaps had something to do with this scarcity. Of the very few specimens of the genus seen by or reported to me, all have belonged to the rarer of the two British species. On August 17th I saw a fine ♂ *C. Hyale* on the Sheppey Cliffs at Warden Point, eight miles from Sheerness, which escaped owing to my not having a suitable net ready at the time; and on the 20th I took a beautiful fresh specimen (also a ♂) in a lucerne field less than a mile distant from my house. One or two more "clouded yellows" have also been seen in the Island, which, from the descriptions given to me, can only have been *C. Hyale*. *C. Edusa* has not yet put in an appearance, though about this time last year it was quite plentiful, while its congener, so far as I can learn, was not observed here at all. I may add that, with the exception of *Vanessa urticæ*, all the *Vanessidæ* seem unusually scarce this year, and I have seen only one fresh *Pyrameis cardui*, on August 22nd, at Guildford.—James J. Walker, 23, Ranelagh Road, Sheerness: *September* 1*st*, 1896.

Description of the pupa of Hesperia comma, L.—This local butterfly has, it appears, been unusually plentiful this year in a favourite haunt on the steep slopes of chalk hills a few miles from Reading. In some instances Mr. A. H. Hamm found individuals in the act of drying their wings, and this set him to searching, with success, for the empty pupa skins, of which he found several, and has very kindly sent me one. When the living pupa cannot be obtained for description—and so far as I know, this one has never been described—the next best thing is to obtain a sight of the pupa skin; for although the shape is not always very perfectly preserved, nor the colour well represented, the other characteristics are often readily distinguishable. In the present case the pupa-skin is most curiously interesting. At first sight it appears so strikingly like that of one of the Thorn moths (*Ennomos* = *Eugonia*) that any one might be deceived by the resemblance. It is rounded in front like a moth pupa, rather flattened, and almost without angles or projections, except that on each shoulder in front of the base of the wing-cover is a sort of epaulet, a narrow transverse ridge, raised and curved back, blackish behind, pale brown in front; the wing and limb-covers are disposed closely to the body, though well marked in the manner of moth pupa, and with the head and shoulder portion dark brown, entirely suffused with a whitish bloom; eye-covers densely set with upstanding, short, light brown bristles; back and abdominal segments covered with rows of minute procumbent bristles pointing backward; the colour of these parts is now light brown, but in the living pupa is probably either green or yellow-brown; across each segment are two rows of short black dashes, almost forming lines, but not very conspicuous; anal segment more strongly bristly, rounded up suddenly beneath, the dorsal portion produced into a large, triangular, brown, horny, projection, down the middle of the back of which is a deep furrow; this projection is also bristly and is terminated by a small, straight, blackish, spike, which is surrounded by slender, but very strong, hooked bristles, by which the pupa holds its silken envelope with great tenacity. In a rather strong, but rough cocoon of white silk, with abundant openwork, the surface garnished with short pieces of dry grass-blades and bits of moss, between which the pupa is clearly visible. Among stems of grass very near the ground.—C. G. BARRETT: *September 9th*, 1896.

On the ovipositing of Hesperia comma, L.—By carefully watching a ♀ I was able to see the manner in which it laid its eggs. It would carefully feel with its ovipositor several blades of grass before selecting one on which to deposit an egg—which was always laid singly, though sometimes a second would be deposited within half an inch of the spot. They were laid on grass blades rather indiscriminately, and also on the leaves and stipules of clover. The egg at first is beautifully white, but after a few days changes to a light brown, or brownish-white, and is rather large and conspicuous, something of the shape of a pork-pie with a small hollow at the apex. In appearance it is more like a minute knob of china or chitine than anything else. Under an ordinary lens it appears quite devoid of sculpture. Besides the eggs, the deposition of which I watched at large, some were obtained from females in confinement, and there is reason to hope that the habits of the larva, and the state in which hibernation takes place, will soon become more fully known.—A. H. HAMM, 24, Hatherley Road, Reading: *September 6th*, 1896.

Acherontia Atropos at Culross, N. B.—Yesterday morning two boys came to my door here, rang the bell, and, when it was answered, asked if we had any use for "this beast," opening an old meat tin. They said it was a "nightingale." Great was my surprise to find a lovely specimen of *Acherontia Atropos*. Before putting it into the killing bottle I listened for the squeaking sound it sometimes utters, but it refused to speak. I do not know whether this is worth recording, but I have never before seen this insect alive, and it is the first time, so far as I know, that it has been taken in this corner of the Kingdom of Fife.—JOHN McGREGOR, West Green, Culross, N. B.: *September 12th*, 1896.

Occurrence of Cedestis gysselinella, Dp., at Merton (Norfolk).—This year I have taken a considerable number of *Cedestis gysselinella*, Dp., and, as from its sluggish habits it is a species that may easily be overlooked, a few notes may perhaps lead to its capture in other localities. When beating the Scotch fir hedges in the Merton kitchen garden on June 21st a female of *Retinia pinivorana* dropped to the ground; stooping down to find it, I noticed a pale ochreous Tineid sitting on a blade of grass, which was at once recognised as *gysselinella*, a species which had not previously been taken here, and Mr. Barrett informs me that it is an addition to the Norfolk list. Between June 21st and July 4th 200 specimens were collected, but it was obtainable much later than this. My largest bag was 36 on July 1st, but I took more than 20 on four other days, the result of about three hours' work in each instance. I did not find *gysselinella* at all an interesting species to collect. Its habits were too monotonous; instead of flying out when disturbed like its near relative *farinatella*, it lazily dropped to the ground, where it either sat on a blade of grass or dived down amongst the mossy roots—in this alone did it show activity, but luckily it has a great dislike to tobacco smoke, without the use of which many would have been lost. I found that the simplest way to collect them was to walk round and round the hedges tapping gently, the eye fixed on the ground at the bottom of the hedge, so as to mark down where each specimen dropped, and to box it sitting or to smoke it out; the net was of very little use, indeed, out of the whole number captured not more than three were taken on the wing, and at no hour of the day did I meet with it flying of its own accord. It flies much more leisurely than *farinatella*, and on the wing appears to be very pale ochreous (almost cream colour), and to be altogether a larger and heavier looking insect. When at rest on a blade of grass it shows no inclination to move, and I generally had to shake it into the pill box. My series varies from forms in which the pale lavender markings are very distinct to others in which they are almost obliterated by the buff ground-colour.—John Hartley Durrant, Merton Hall, Thetford: *September*, 1896.

Further notes on the occurrence of Steganoptycha pygmæana, Hb., at Merton (Norfolk).—In the Ent. Mo. Mag., XXXI, 105-6 (1895), I recorded the occurrence here of *Steganoptycha pygmæana*, Hb., stating the period during which I had taken it in 1894, and remarking that as the season was an exceptional one, April 15th would probably be the date when it would be well out under normal conditions. I met with it again in 1895, and also this year, in each season securing nearly 50 specimens. I do not think that it has been less common since 1894, but it has been more difficult to collect, for it will only fly freely when the sun is shining brightly and continuously in the middle of the day, and during the last two years the sun has been much obscured by passing clouds, so that it had fewer opportunities for flight; it is to this cause rather than to the species being less plentiful that I attribute my diminished bags; moreover, during the present season, athough I took 18 specimens between April 6th and 9th, the weather then became cold, and no more were met with until the 19th, when it was well out. The dates during which *pygmæana* has been taken here in the last three years are as follows:—

1894......March 25th to April 15th...............well out, April 8th to 9th.
1895......April 9th to April 23rd.................. „ April 16th to 17th.
1896......April 6th to 9th; April 19th to 22nd „ April 19th.

—Id.

Tephrosia biundularia double-brooded in both races.—I went this spring to look for *T. crepuscularia*—the brown form—in the only wood in this district in which it is known to be found. I was successful, and from one of the specimens obtained a fine batch of eggs, from which was reared an immense family. I took every care to feed them well, that they might not emerge small, and I know that they never wanted food. In July the moths emerged in great numbers, *all small*, not brown, as are those of the spring brood, and so insignificant that I was disgusted with them, and threw most of them away.

Then, at the end of July, I went to a wood some miles from here, where the white form—*biundularia*—is common on the beech trunks in May and June, but where the brown April form is never found. Here the keeper had been using my moth-trap to scare foxes away from his birds, and had kept the insects captured in it for me. Among them were ten *T. biundularia* of the second brood.—E. L. Bazett, Springfield, Reading: *August 25th*, 1896.

[Mrs. Bazett's experience in this instance was so strongly confirmatory of the view frequently expressed by me that our *Tephrosia crepuscularia* (so called) and *T. biundularia* are but one species, that I asked for a sight of specimens, which, with Mrs. Bazett's invariable kindness, were promptly sent. The early specimens are very brown, most emphatically the March and April form in this country, what we have usually called *crepuscularia*. (I use the name "without prejudice," to which course I feel certain that my friend Mr. Chas. Briggs will not take exception). The offspring of this brown form, here reared, are very pretty, neat, *white* creatures, not more than one-half the size of the parents, in markings and colour *typical southern biundularia*. The actual second brood of *biundularia*, taken in July in the wood in which the white *biundularia* form *only* is known, are rather more obscure and suffused, and actually more tinged with brown than the others.

I want emphatically to draw attention to these details:—the second brood of the brown *crepuscularia is obviously biundularia*; and, moreover, the evidence produced shows clearly that the frequent assertion of absolute single-broodedness in the white *biundularia* form is erroneous, and, so far as I am able to see, the remaining evidence relied on by those maintaining the distinctness of the two forms, as species, is swept away.—C. G. B.]

Variation in the males of Ptomaphagus sericeus, Panz.—Some time ago my friend Mr. F. Bates of Leicester called my attention to the fact that there were two well-marked forms of the male of this common species. This peculiarity does not appear to have been generally noticed, though the two forms are about equally common in collections. In well developed large specimens the males have the hind tibiæ distinctly curved towards the base, and abruptly dilated on the inner-side from about the basal third to the apex, so that the basal portion appears to be emarginate within. In moderate-sized and small specimens the males have the hind tibiæ almost straight, and gradually widening from the base, that is to say formed as in the females. The males of the larger form also have the intermediate tibiæ a little more bowed than in the females. A somewhat analogous degree of development is to be found in the males of various species of *Anisotoma*. It may be noted that males of the closely allied *Ptomaphagus varicornis*, Rosenh., of the same size as the large form of *P. sericeus*, have the hind tibiæ simply a little curved, without trace of dilatation within.—G. C. Champion, Horsell, Woking: *Sept. 1st*, 1896.

Prionocyphon serricornis, Müll., &c., at Mickleham.—On August 22nd, I captured a specimen of this rare beetle at Mickleham, by sweeping under beech trees. Mr. Champion on the same day obtained *Micrambe abietis*, *Eros* (*Platycis*) *minutus*, and *Chrysomela göttingensis*. He has already recorded *Prionocyphon* from the same locality, from a specimen found on August 24th, 1888.—R. W. Lloyd, St. Cuthberts, Thurleigh Road, Balham: *September 5th*, 1896.

Anisotoma furva, Er., &c., at Deal.—On the evening of August 28th, about half an hour before sunset, I had the good fortune to sweep up a fine pair of *Anisotoma furva*, Er., from the Marram grass growing on the seashore near the Coastguard Station between Deal and Sandwich. So far as I am aware the last recorded British example of this exceedingly rare species is the one taken by my friend Mr. H. Moncreaff on Southsea Beach in 1879 (Ent. Mo. Mag., ser. 1, vol. xvi, p. 230). In the same place *Anthocomus sanguinolentus* also turned up, but only a single specimen; and the curious linear Hemipteron, *Chorosoma Schillingi*, so reminiscent of an exotic "stick insect" on a small scale, was much more plentiful than I have ever before seen it in this locality. The tiny black *Apion sedi* occurred rather freely at the roots of the yellow stonecrop (*Sedum acre*), but was found more plentifully on a previous visit to Deal in June last, on which occasion I captured a pair of the rare *Bagoüs binodulus*, while sweeping for *Donaciæ* on the banks of a ditch a little way inland. In spite of the encroachments of golf, which have utterly ruined many of the best spots, the wide extent of sandy coast between Deal and Sandwich, which in bygone times has yielded so many rare and local insects of all Orders, is not yet entirely exhausted as a collecting ground, and will be found to repay a visit at any time.—James J. Walker, 23, Ranelagh Road, Sheerness: *September 1st*, 1896.

Forficula pubescens and other Orthoptera at Folkestone.—While sweeping at the Warren, near Folkestone, on September 8th, I had the good fortune to capture a male of *Forficula pubescens*, Géné. Unfortunately I had not time to wait and try for more. As regards other *Orthoptera*, *Stenobothrus lineatus*, Panz., was common, *St. viridulus*, L., less so, *St. bicolor*, Charp., was very abundant, and the forms *mollis*, Charp., and *purpurascens*, Fieb., were common, and *St. parallelus*, Zett., common; *Gomphocerus rufus*, L., was common at the Dover end of the Warren. I was surprised not to find *Locusta viridissima*, L., in greater numbers, only getting two specimens, whereas in previous years I have captured it plentifully at the Warren, but a little earlier in the season. *Thamnotrizon cinereus*, L., could be heard chirping in every bramble, and *Platycleis grisea*, Fab., was common; of the latter I found several specimens which had not yet reached the imago stage, females in every case, well marked with green, and one ♀ imago had green on the outside of the posterior femora and sides of the abdomen.—Malcolm Burr, Bellagio, East Grinstead: *September 8th*, 1896.

Mecostethus grossus, L., near Lyndhurst.—My friend Mr. W. M. Jeffreys, while collecting in the New Forest, found *Mecostethus grossus*, L., in a bog about three miles from Lyndhurst; I am unaware whether he found it in numbers, but he was good enough to spare me a handsome addition to my collection in three perfect specimens (2 ♀, 1 ♂). This, with their discovery in Norfolk and the West of Ireland, recorded by Mr. C. A. Briggs in last year's Ent. Mo. Mag., seems to point to the fulfilment of Mr. Eland Shaw's prediction that observation would prove this species to be fairly plentiful (Ent. Mo. Mag., vol. xxv, p. 413), though in this instance they have been found far away from the fen district, which makes the locality the more interesting.—Id.

Œdipoda tartarica at Huddersfield.—On a recent visit to Mr. S. L. Mosley's Museum he kindly gave me a specimen of this locust captured in a box of oranges in Huddersfield market in September, 1891. This, I believe, is the earliest as well as the most northern record of the species in Great Britain, and is, so far as I can ascertain, the only autumn specimen, the others having been imported in early spring. —C. A. Briggs, 55, Lincoln's Inn Fields: *September 2nd*, 1896.

Panorpa cognata at Folkestone.—I find that I have omitted to record the occurrence of this somewhat rare species at Folkestone in 1895. During a short visit there from August 9th to 12th I found the species somewhat commonly under the Downs near the Dover Road.—Id.

Sisyra Dalii near Leatherhead.—On July 6th, 1895, I found this species commonly at the "White Falls," Randalls Park, Leatherhead, in company with *S. fuscata* and *S. terminalis*. I was not able to go there at the same time this year, but a visit on May 26th produced *fuscata* and *terminalis*, but no *Dalii*.—Id.

Allotrichia pallicornis, Eaton, and other Trichoptera from Clydesdale.—In removing from Carluke to a district with a denser population and more smoke, the pleasure and profit of entomological work out of doors have naturally suffered. There are, however, some little compensations. The river (Clyde) seems to be much more productive of *Trichoptera* here than at Carluke, which is rather surprising, considering the volume of impurities it must receive between the two places. In June the number of these insects was enormous, and although I did no systematic collecting, but contented myself with picking up what I could on one of the bridges, I nevertheless obtained some interesting insects. The first species to attract attention was that fine longhorn, *Leptocerus nigro-nervosus*, Retz.; it was out during the last days of May and in early June, but did not appear to last long, soon giving place to *L. annulicornis*, Steph. This latter was rather common, and when newly out is a pretty insect from its white wing tips. *L. commutatus*, McL., *L. albifrons*, L., and *L. cinereus*, Curt., followed, and all were more or less common. *Hydropsychidæ* were in countless myriads, and a perfect pest in houses near the river. *Hydropsyche pellucidula*, Curt., and *H. guttata*, P., appeared first, and were most abundant; later *H. lepida*, P., came out, then *H. instabilis*, Curt., which was also very common. Perhaps the most interesting capture of all was *Allotrichia pallicornis*, Eaton, which was common in June. This species was previously taken by Fletcher near Worcester, and I once took a ♀ near Carluke, at a burn which soon afterwards was spoiled for entomological purposes; beyond these I know of no other British records for this pretty little insect. The only other species of the *Hydroptilidæ* taken was *Hydroptila forcipata*, Eaton; it appeared simultaneously with *A. pallicornis*, but, unlike the other insect, it did not pass away so quickly; fresh specimens have continued to appear down to the present time. Many other less noteworthy caddis-flies have been seen.

Compared with its higher and purer parts, the favourable points connected with the river here are probably a milder temperature and a much increased volume of water, the latter along with the still very appreciable current serving to neutralize the influences which are noxious to insect life.—Kenneth J. Morton, Uddingston, N.B.: *August*, 1896.

Bombus Smithianus, White, at Poyntzpass, Ireland.—When the hay was being cut on my lawn in July last I noticed that there were a number of wild bees' nests, the ground being well adapted for them, as it was covered thickly with moss or "fog" as they call it here. Of course the scythe disturbed the bees from their homes and caused no little commotion. In most cases neither my man (who was cutting) nor I who followed him tossing the hay, were molested, but we found that certain bees were very fierce, so much so, that we had to beat a hasty retreat, and my dog who, being young and inexperienced, ventured to explore the nest, hurried away with loud expressions of disapproval. These bees I noticed were very brilliant in colouring, and finding a nest that was in a less aggressive and active mood than usual, owing probably to heavy rain having fallen, I captured several. These, on examination, appeared to me to be *Bombus Smithianus*, but not liking to depend on my own determination I forwarded the specimens to Mr. E. Saunders, who confirmed my opinion, but tells me that the females and neuters are indistinguishable from *B. venustus*. I had hoped to obtain some more males, but owing to the wet weather I have been unable to do this. The nests were on the surface in the depth of moss, and neatly covered over with a moss covering like a lid somewhat. I stupidly did not preserve a nest, and of course when I went to look later all were gone. What struck me most was the fierce way in which these bees attacked; they followed me for fully eighty yards, and though beaten off with my hat returned to the charge again and again, without, I am glad to say, succeeding in stinging me. They became very torpid after rain, and I had not much difficulty in picking out specimens from the nest with my forceps, though one or two did make a feeble onslaught. It is remarkable to find this bee in full possession here, while apparently non-existent in England (one example from Dover being the only record), and occurring only in the islands (Hebrides, Orkney and Shetland) of Scotland and then far south in Scilly. The distribution as it stands at present is most curious, but probably further research may straighten it out a bit. I think my experience is a good hint for those who wish to study the *Bombi*, for following the heels of a mower where the ground is carpeted with moss is evidently likely to give good opportunities of examining the nests of these bees. The other species that occurred were *B. agrorum* and *B. lapidarius*.—W. F. Johnson, Acton Glebe, Poyntzpass: *September* 10*th*, 1896.

British Chrysididæ: correction of an error.—Having been absent from England since March last, I have only just become aware of an error which I did not observe in correcting the proofs of my List of British *Chrysididæ* (Ent. Mo. Mag., 1896, p. 124). Under the heading "Genus Chrysis, Linn.," the first item should be "1. neglecta, Shuck." (instead of "succincta"). Fortunately this slip does not affect the Synoptic Table, where (on p. 126) the name "neglecta" is duly given. I should like, however, to take this opportunity of mentioning an additional character to those there enumerated for distinguishing *C. neglecta* from the species most like it, viz., *pustulosa, hirsuta* and *osmiæ*. These latter have all rather long "genæ," *i. e.*, there is a considerable space between the eyes and the base of the mandibles, whereas in *neglecta* there are practically no "genæ," the eyes almost touching the mandibles.—F. D. Morice, Brunswick, Woking: *September 8th*, 1896.

Rare Diptera taken in the New Forest in 1896.—Although the commoner kinds of *Diptera* were not so abundant as usual during the past hot and dry summer, it seems to have been favourable to some of the rarer species, and during June, July and first half of August I was fortunate enough to take the following:—*Epiphragma picta*, July 21st (1), *Atylotus fulvus* (1), *Laphria marginata* (12), *Dioctria linearis* (1), *D. flavipes* (2), *Nephrocerus flavicornis*, July 9th (1), *Didea fasciata* (2), *Syrphus guttatus*, June 22nd (1), *Xylota nemorum* (1), *Myopa fasciata* (2), *Stevenia maculata* (1), *Acanthiptera inanis*, June 11th and July 26th (2), *Lissa loxocerina* (1), and on August 13th a splendid specimen of *Callicera ænea* taken on flowers of *Mentha* growing in the brook on Butts Lawn, near Clay Hill, Lyndhurst, which brings the number of recorded British specimens up to six. *Nephrocerus flavicornis* has only been taken once before, in 1894, as recorded by me in this Magazine (vol. vi, 2nd ser., p. 255), but through an error, the middle of May instead of June 16th was the date of capture then given. *Syrphus guttatus* has also only been recorded once previously by Mr Coryndon Matthews (vol. v, 2nd ser., p. 39), and *Acanthiptera inanis* is not included in Mr. Verrall's list, but will be found described by Mr. Meade (vol. xx, p. 9) in his "Annotated List of British *Anthomyiidæ*." *Epiphragma picta* is figured by Curtis in his "British Entomology" (plate 50) under the name of *Limnobia ocellaris*, but my specimen unfortunately is rather faded and possessed only three legs when captured.—Fredk. C. Adams, 68, St. Ermin's Mansions, Westminster: *September*, 1896.

Reviews.

Transactions of the New Zealand Institute, 1895 (Extracts from the). Wellington, N. Z.

Art. 38.—Further Coccid Notes: with Descriptions of New Species, and discussions of questions of interest (pp. 379–410, 8 plates).

Art. 39.—Contributions towards a Monograph of the *Aleurodidæ*, a Family of *Hemiptera-Homoptera* (pp. 411–449, 11 plates).

Both articles by W. M. Maskell, Registrar of the University of New Zealand, Corr. Mem. Roy. Soc. of South Australia, and all the figures in the plates are from the author's drawings.

The article on the *Coccidæ* consists of critical observations on previously described species and descriptions of twelve new species, among which are included *Icerya nudata*, and two of a new genus, *Lachnodius*, founded on *Dactylopius eucalypti*, Mask., mostly all natives of Australia. These are preceded by a Synopsis of the larval characters of the eight Sections into which the *Coccidæ* are divided, illustrated in two plates of type-figures.

The article on *Aleurodidæ* contains a bibliographical list of all the authors who have treated of the Family, in addition to the special quotation of the work in its proper place in respect of each species, of which 62 are referred to as of the genus *Aleurodes*, and 4 to the genus *Aleurodicus*, inclusive of the 21 new species now first differentiated and illustrated by coloured figures. Nearly all these represent the larva or pupa only, the respective imagos being unknown. Adverting to the protest by Mr. J. H. Durrant (Ent. Mo. Mag., vi, n. s., p. 189, 1895) against giving names to the preparatory stages of insects, the author says, "It may be thought that an account of the larvæ or pupæ, without a description of the imagines, is too imperfect for scientific accuracy, and is therefore of little use to science. Probably such a view might be correct as regards the greater number of insect Orders, but in the *Aleurodidæ* the case is different;" and he then goes on to give the reasons—the tangible differences in the early state, and the often inappreciable distinctions in the imago, to which may be added that while the pupæ may be easily obtainable, the imago form may be rarely seen, and then, as already said, difficult to distinguish.

This is the most perfect summary of the *Aleurodidæ* of all countries yet published; had the presumed native country and the food-plant or plants been added to the references it would have been still more perfect. "Possibly," says the author, "these notes may induce entomologists to devote more attention to these minute and interesting, and by no means unimportant, organisms."

TENTH REPORT ON THE INJURIOUS AND OTHER INSECTS OF STATE OF NEW YORK, for the year 1894; by J. A. LINTNER, Ph.D. Albany, University of the State of New York. 1895.

This Report (only just received) is largely made up of comparatively short articles on a multitude of different insects, all of which will bear careful reading, as adding much to our general knowledge. Possibly the most interesting are the notes on the Dipterous genera *Sciara* and *Phora*, and the chapter on the long-lived "seventeen year locust," the local brood of which, previously seen in 1877, was true to date. A good half of the Report is occupied by an "Appendix." This consists of a chapter on Scorpion Flies (*cf. ante*, p. 164), a list of publications (mostly semi-popular) by the author in 1893 and 1894, together with a classified list from 1862—1869, an Index to Reports 1 to 10, &c., &c. There are two plates, and many excellent illustrations in the text.

Societies.

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *August 27th*, 1896.—R. SOUTH, Esq., F.E.S., President, in the Chair.

Mr. Montgomery exhibited a beautiful xanthic example of *Epinephele Tithonus*, taken at Jevington on July 27th, all the usually black area being a rich dark fulvous. Mr. Auld, the results of his this year's breeding of *Abraxas grossulariata*, in the neighbourhood of Lewisham. Mr. Adkin, a head of flower buds of ivy with ova of *Cyaniris Argiolus* in sitû, and made some remarks upon the habits of the species. Mr. Manger, a specimen of *Eugonia polychloros* taken on May 24th at Brockley; it was suggested that the larva fed on poplar as no elm was in the neighbourhood. Mr. Moore, specimens of *Papilio Daunus* and *P. Cresphontes* from St. Augustine's, Florida; also several specimens of the "walking stick" *Anisomorpha buprestoides*, which, when seized, will spurt a strong acid vapour from exceptionally large glands placed in the sides of the thorax. Mr. Mansbridge, a bred series of *Polia chi* from a dark female taken near Huddersfield; several examples were dark, having all the lines, bands and markings of v. *olivacea*, but without any trace of the olive-green shade of that variation. Mr. South, two specimens of *Caradrina ambigua*, taken by Mr. Woodforde near Exmouth in July this year; the specimens were unusually pale and glossy, no doubt, it was thought, due to its resting habit in that district. In answer to a question from Mr. Barrett, Mr. McArthur said that the larva of *Hadena adusta* spun its cocoon in the autumn but did not turn to pupa till the spring; he had repeatedly found them at the roots of moss. Mr. Auld reported that v. *nigrata* of *Limenitis Sybilla* had been taken in some numbers this year; he also knew of a specimen of *Polyommatus Icarus* having no vestige of spots on the under-side, and a var. of *Dryas Paphia* possessing a pale border and a dark centre. Mr. Turner had taken the second brood of *Zonosoma annulata* in N. Kent, and three specimens came to sugar. Mr. Adkin had spent a fortnight at Eastbourne but had seen no *Colias Edusa*; Mr. South's experience was the same. Mr. Mansbridge had heard that the species was to be taken on the East Coast. Mr. Tutt, during a month spent in S. France, had seen but half a dozen, in fact, it always appeared scarcer than *C. Hyale* on the continent. Mr. Tutt asked if there was any direct evidence that *Pyrameis cardui* hibernated as an imago. He had failed to find any authenticated record. In N. Africa Mr. Eaton had reported the larvæ as feeding during the winter.—H. J. TURNER, *Hon. Secretary*.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *June* 15*th*, 1896.—Mr. R. C. BRADLEY in the Chair.

Mr. J. W. Moore, 194, Stratford Road, Birmingham, was elected a Member of the Society.

Mr. J. T. Fountain exhibited series of *Leucophasia sinapis* from Trench Woods, *Arctia villica*, bred from Dawlish larvæ, and *Arctia fuliginosa*, var. *borealis*, bred from Scotch larvæ. Mr. A. H. Martineau exhibited three specimens of the rare *Sapyga clavicornis*, from Solihull, all males. He said that he had observed that when at rest their large clubbed antennæ were laid underneath along the body between the legs, right out of sight, with the clubbed ends turned upwards. Mr. C. J. Wainwright showed the handsome, rare Dipteron, *Doros conopseus*, from Wyre Forest; a short series of *Hadena genistæ* from Wyre Forest; and a specimen of

Polyommatus Phlœas from Sutton Park, the markings and colours of which were bleached on the left wings, both on the upper and under-sides; this appeared as if it were a rubbed specimen, but was quite uninjured, possessing all its scales. Mr. R. C. Bradley showed a specimen of *Spilosoma menthastri*, with very few spots, from Sutton; a specimen of *Cucullia asteris*, bred from a larva found on the scabious at Barmouth; and a specimen of *Dioctria rufipes* which had captured an ichneumon as large as itself.

July 20*th*, 1896.—Mr. P. W. Abbott, Vice-President, in the Chair.

Mr. E. S. Haines, Danetree House, Stourbridge, was elected a Member of the Society.

Mr. R. C. Bradley showed a specimen of *Sesia culiciformis* taken in his garden at Sutton. Mr. Abbott said that he believed this to be quite a new record; he had been taking it in Wyre Forest, and also *S. cynipiformis*, the latter having been quite common in the larval stage in the oak stumps. While collecting them in May this year he had found larvæ in all stages, and pupæ at the same time. Mr. Wainwright showed *Chœrocampa elpenor*, a single specimen taken by Mr. Herbert Stone at Marston Green. He said that the species had not been taken near Birmingham for many years, though it had occurred near Marston Green about forty years ago. Mr. Fountain said that he had taken it recently at Shirley. Mr. Wainwright also showed a nice series of *Criorhina asilica* taken at Trench Woods in May last, where it had been fairly common. Mr. G. W. Wynn showed the following *Lepidoptera* from Wyre Forest this year:—*Eupithecia venosata*, a new record; *Acronycta ligustri*, *Boarmia repandata*, var. *conversaria*; *Phorodesma bajularia*; *Acronycta leporina*; *Orgyia gonostigma* ♂, *Angerona prunaria*, a series; *Cymatophora or*; *Boarmia roboraria* and *Hadena genistœ*. Also *Triphœna fimbria* bred from Sutton, including one in which the band of the hind-wings was decidedly grey in colour, not black. *Tœniocampa populeti*, from Rhayader, North Wales; and bred series of *Hadena glauca* from both Sutton and Cannock Chase, those from Sutton being darker than those from Cannock, contrary to experience in other species of *Lepidoptera*. Mr. Patley showed a nice series of *Cucullia umbratica* from Wyre Forest. Mr. R. G. B. Chase showed a small collection of *Lepidoptera* made during a month spent at Tenby, including *Cleora lichenaria* and *Agrotis lucernea*. Mr. P. W. Abbott, showed a series of *Thecla pruni*, from near Peterborough, and *Papilio Machaon*, from Wroxham Broad, Norfolk. Mr. J. T. Fountain showed *Scotosia vetulata*, from Salford Priors.

August 17*th*, 1896.—Mr. R. C. Bradley in the Chair.

Mr. Wainwright showed, for Mr. C. A. E. Rodgers, a specimen of *Smerinthus tiliœ* from Malvern, which entirely lacked the reddish tinges, and was a rich dark green. Mr. R. C. Bradley showed *Formica exsecta* from Bournemouth, one ♂ taken on May 10th; also *Ponera contracta* from his garden at Sutton, a rare ant, not hitherto known in the Midlands. Mr. R. G. B. Chase showed *Vanessa c-album* and *Triphœna janthina* from Edgbaston. Mr. A. H. Martineau showed a piece of a gate post with nests of *Anthophora furcata* and *Pemphredon lugubris*, and explained the manner of boring and making them.—Colbran J. Wainwright, *Hon. Secretary*.

ON *PLAGITHMYSUS:* A HAWAIIAN GENUS OF LONGICORN *COLEOPTERA.*

BY D. SHARP, M.A., F.R.S.

The following sketch has been drawn up from the material received by the Committee for investigating the fauna of the Sandwich, or Hawaiian, Islands, and will give some idea of the extent of the work done by Mr. Perkins at the entomology of the group ; and it will also allow us to form some opinion of the adequacy or inadequacy of his collections for the purpose of satisfactorily working out the entomological fauna; this genus being probably the one of considerable extent in *Coleoptera* that is best represented as the result of Mr. Perkins' labours. The number of species known is increased from four or five to about five times one of those numbers; certain species being still inadequately elucidated. Of some of the species Mr. Perkins has obtained fine series of four or five dozen specimens, an achievement far beyond what I had hoped for when he went to the islands ; but others are represented by only one or two individuals, and I judge from this that other species may exist which have yet eluded his observations ; indeed, I consider there are probably thirty good species of this one endemic genus still existing in the islands.

Plagithmysus will, with its two cognate genera *Clytarlus* and *Callithmysus*, form a separate group, *Plagithmysides*, to be placed between the *Clytides* and *Anaglyptides* of Lacordaire. This new group is peculiar to the Hawaiian islands, and is distinguished by a very curious character, viz., that there is no transverse folding of the wings, which therefore project beyond the tips of the body ; at the same time the elytra are extremely attenuated towards the apex, and the tips of the wings being twice longitudinally plicate, continue the outline. I believe this peculiarity will be found to be connected with some important features in the natural history of the species, which must be in some points very unusual, for the males have the abdomen reduced in size to so great an extent that it forms merely a small appendage to the rest of the body ; a condition which will, I believe, not be found to exist, in so extreme a state of development, in any other forms of *Coleoptera*. According to Mr. Perkins the manner of pairing of the sexes is highly peculiar.* The mode of holding the wings is correlative with a characteristic structure of the tips of the organs, inasmuch as this part is provided with two thick, slightly divergent veins, instead of the three veins (one thick, two very thin) that are found in other genera of Longicorn *Coleoptera* of the subfamily *Cerambycides*.

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* See this volume previously, page 193.

The three genera of *Plagithmysides* are very readily distinguished :

1. Hind femora gradually much dilated from the base to the tip, and here densely set with velvety tomentum. *Callithmysus*, n. g. Type, and only species, *Clytarlus microgaster*, Sharp.
2. Hind femora slender at the base, but becoming rapidly larger so as to form an elongate thick process, longer than the basal thick part. Front coxæ distinctly separated. Gen. *Plagithmysus*, Motsch. Type, *P. pulverulentus*, Motsch.
3. Hind femora with an elongate, thin basal stalk, becoming larger in such a way as to form a well-defined terminal head, or capitulum, not longer than the stalk. Front coxæ separated only by a slender lamina. Gen. *Clytarlus*, Shp. Type, *C. fragilis*, Shp.

This latter genus will include several other species, but as the material we have received is not so ample as that representing *Plagithmysus*, and as it may probably be further, and considerably, augmented, I do not propose to deal with it here.

PLAGITHMYSUS.

Plagithmysus, Motsch., Bull. Mosc., 1845, Pt. II, p. 41; Sharp, C. R. Ent. Soc. Belgique, July, 1885, p. lxxiv.

The genus *Plagithmysus* was established by Motschoulsky for a species which he said was found in California by Eschscholtz. This was certainly erroneous. Eschscholtz went to the Hawaiian islands as well as to California during his journey round the world with Kotzebue, and it was doubtless there that he procured *P. pulverulentus* described by Motschoulsky some twelve or fifteen years subsequent to the death of the traveller. *P. pulverulentus* is well known in the islands, but nothing like it has ever occurred in California, and the genus has been rejected from the North American faunistic lists.

In 1835 Boisduval described, in the Faune de l'Océanie, p. 485, a Longicorn beetle under the name of *Clytus attenuatus* that he said inhabited " Nouvelle Hollande ;" this insect has been, and no doubt correctly, referred to the genus *Plagithmysus* by Lacordaire. There can be no doubt that it also came from the Hawaiian islands, though Chevrolat subsequently did all he could to make confusion more confounded, by stating that the locality of *Clytus attenuatus* was New Zealand, and that it was probably the same as the New Zealand *Œmona humilis*, Newm., an insect to which *C. attenuatus* has not the slightest resemblance. I have previously commented on these careless proceedings (C. R. Ent. Belg., 1885, p. lxxiv), but having since then received Mr. Perkins' fine collection, I have again examined the unique type of *Clytus attenuatus*, which is now in the British Museum. Boisduval's two lines of contemptible description, and his erroneous locality, make one hesitate to adopt the name he proposed, but his specimen is of great interest, as being the oldest preserved example of the genus; Eschscholtz's specimens are 70 years old, and Boisduval's no doubt somewhat older: they do not give us any reason for supposing that a change has taken place in the characters of the species of *Plagithmysus* during the seventy generations of insect life that have been passed through since these examples were secured and preserved. I specially mention this, because when my former note was written an inference of an opposite character might have been drawn from my remarks. Though the greater knowledge I have obtained as the result of Mr. Perkins' successful work leads me to the conclusion I have just announced, yet, at the same time, it is only proper to say that the evidence is but slight; so that though we may be able now to match exactly these specimens three quarters of a century old, yet it is possible that at that time the range of variation of the two species may have been different from what it is at present.

This brings me to another point on which I venture to offer a few remarks, viz., the variation and distribution of the species of the genus. This is highly remarkable, for whereas the distribution is about as limited as is possible, yet the variation within the tiny realm of each species is in some cases very great. No species of *Plagithmysus* occurs in two islands; several species may inhabit one island; the most closely allied species may exist in the same island, each varying much and each remaining distinct. As regards the variation itself: the sexes may be very different, or they may be almost exactly alike; the difference between the sexes of a species may be much greater than the differences between allied species: two species may be almost indistinguishable in one sex, and yet quite distinct in the other sex. The variation in size of the individuals of one species is on the average greater than what occurs in species with a wide geographical distribution. In some species the male averages in size larger than the female, in other species the reverse is the case.

I do not intend to comment on these facts further than to say that they suggest, to my mind, that the specific distinctions are not directly due to geographical isolation, but may be due to a complex of the same causes that have given rise to sexual distinctions, with probably some other cause added. It is possible this added cause may be the fact that, whereas the sexes of one species have the same food, allied species, as a rule, have different food. But, on the other hand, it is equally possible to contend, that the supplemental difference of specific from sexual distinction is to be found in aboriginal constitution; though this last point possibly does not amount to more than that the said supplemental distinction is not of very recent origin.

PLAGITHMYSUS VITTICOLLIS, *n. sp.*

Niger, pedibus nigro-rufis, femoribus ex parte majore rufis; prothorace opaco, vittis quatuor latis ochraceis; elytris ad humeros latis, guttis albidis irregularibus ornatis, ad latera posterius parcissime punctatis.

Long., 11—18 *mm.*

Front of head with a good deal of white pubescence. Thorax dull, covered with tomentum that quite conceals the very dense fine sculpture; the four yellow stripes broad and very distinct; no smooth space at the sides; the anterior tuberosity strongly elevated, the posterior slightly elevated and marked with two transverse lines. Scutellum broad and short, truncate. Elytra rather closely punctured at the base, the lateral portions nearly smooth, marked with very conspicuous little patches of white pubescence irregularly placed, and not agreeing on the two sides. Femora red, black towards the tip; the rest of the legs nearly black. The spots of yellow pubescence on the meso- and meta-sternal side-pieces very definite and distinct.

The species varies in colour, the external parts of the elytra being sometimes yellowish or red.

Kilauea, Hawaii; August, 1895. Ten specimens; on "Akala" (Rubus).

Var. *longulus.* A single individual was obtained at Olaa, Hawaii, in June, 1895, from another tree, "a large, smooth, light-barked tree, whose trunk is always excised into an angular form; the *Plagithmysus* burrows in the solid trunk." I doubt this being distinct from *P. vitticollis*; it is of more elongate form, the femora are black, except at the base; the clothing of the thorax is less dense, and its posterior tuberosity is perhaps rather more elevated.

PLAGITHMYSUS NEWELLI, *n. sp.*

Nigro-rufus, thorace dorso inæquali, dense minute punctato, obsolete bivittato, utrinque quasi carinulato, lateribus politis; elytris ubique dense punctatis, guttis albidis irregularibus ornatis. *Long.*, 11 *mm.*

Although somewhat similar to *P. vitticollis*, this is very distinct, the elytra being densely punctate, and the thorax very peculiar. The flanks are shining but minutely punctate; the dorsum is densely punctate, and is limited by an irregular line, along the inner margin of which there is a little flavescent setosity; the posterior tuberosity bears two raised lines, the anterior one abruptly curved. There are flavescent spots on the sides of the breast and abdomen. The legs are dark red, strongly suffused with black.

We are indebted for our unique example of this species to Brother Matthias Newell, in recognition of whose kindness I have named the species. He found it at Wailuku, Maui, in 1894. Mr. Perkins believes it was brought down with timber from the mountains of West Maui. Although the specimen is not in very good condition, there is no doubt it belongs to a very distinct species.

PLAGITHMYSUS CONCOLOR, *n. sp.*

Rufescens, elytris dilute brunneis, guttis albidis irregulariter positis; thorace vix perspicue quadrivittato; pedibus elongatis, femoribus basi flavo. *Long.*, 12—15 *mm.*

Thorax slender, with a good deal of white pubescence which does not form stripes, but, nevertheless, is so arranged as to be, as it were, beginning to be stripes; the anterior elevation abrupt, truncate, the two carinæ on the posterior elevation distinct. Elytra very densely punctured at the base, behind this with a patch of dense minute punctuation, on which the delicate pubescence is slightly darker in colour, behind this sparingly punctate, and somewhat shining; the numerous flecks of white pubescence are irregularly scattered, but are absent from the post basal angular mark of finer punctures. Legs very long, red, the femora flavescent at base.

Kaui; three specimens, 1 ♂, 2 ♀. This is a very easily distinguished species; the only one at all like it is the Oahuan *P. solitarius.*

PLAGITHMYSUS SOLITARIUS, *n. sp.*

Rufus, prothorace vittis quatuor albidis; elytris crebre punctatis, guttis numerosis albidis irregulariter positis. *Long.*, 10½ *mm.*

Antennæ entirely red, with very little setosity; thorax dark red, with two broad stripes of white pubescence on the middle, and with the flanks scantily clothed with white pubescence, so as to give from above the appearance of a second pair of stripes; the two lines on the posterior callosity distinct. Elytra densely and roughly punctured, the punctuation almost the same at the sides as elsewhere. Legs concolorous with body, hind tarsi with much white pubescence.

Oahu; a single example was found on the ridge bordering the Nuuanu Valley on the south side, about 2000 ft., in October, 1892. The individual appears to be a male, although the terminal joint of the antennæ is scarcely longer than the penultimate.

PLAGITHMYSUS CUNEATUS, *n. sp.*

Robustus, dense punctatus, fere opacus, rufus, prothorace abdomineque nigris, elytris testaceis plaga magna communi nigricante, densissime punctata, minutissime albido-pubescente. *Long.*, 11—20 *mm.*

Agrees in facies with *P. pulverulentus,* though totally different in colour. Antennæ long and slender, yellowish. Thorax dull, densely sculptured, rough above, with two transverse irregular short lines behind the middle; at the sides more distinctly punctured, but slightly shining and almost without pubescence. Elytra very densely punctured, broad at the base, yellow, with a very large common black mark, extending from near the tip to near the base, and within about one-fifth of the whole length; thus a broad lateral margin and a still broader basal area are left yellow; the dark part is very finely and densely punctured, and in one light is seen to bear a very minute white pubescence, which, however, does not extend to the anterior part of the dark mark. The legs are dark red, with much white setosity; on the apices of the hind tibiæ the hairs are more scanty and darker in colour; the hind tarsi with dense white hairs.

Kaala, Oahu, 1000 ft.; March, 1893; eighteen specimens.

There is great variation in size, and the smaller of the specimens have some small flecks of pubescence on the apical parts of the elytra.

PLAGITHMYSUS FINSCHI.

Clytarlus Finschi, Harold, Mt. München. Ent. Ver., 1880, p. 166.

Haleakala, Maui, 4000 ft.; May, 1896.

The variation in size, from 9½ to 21 mm., is very great, but in other respects the fine series secured by Mr. Perkins is unusually constant. The female appears to be on the average larger than the male.

PLAGITHMYSUS PULVERULENTUS.

Plagithmysus pulverulentus, Motsch., Bull. Mosc., 1845, II, p. 370.

Clytarlus robustus, Shp., Tr. Ent. Soc. London, 1878, p. 206.

Kaala, Oahu, 2000 ft.; April, 1893.

The small series procured by Mr. Perkins surpasses any of the other species in variation in size, which is from 5½—18 mm., an extreme exhibited by few insects.

PLAGITHMYSUS BISHOPI, *n. sp.*

Niger, antennis elytris pedibusque rufescentibus, femoribus extrorsum nigris, thorace vittis quatuor albidis; elytro singulo linea pubescente albida, anterius versus latus divergente, ante lineas has ad suturam plaga angusta nigra. *Long.*, 14—17 *mm.*

Antennæ elongate, terminal joint in the male unusually long. Thorax rounded at the sides, and much narrowed in front; black, with four vittæ of white delicate pubescence; the line of asperities along the middle unusually narrow, forming a sort of carina only distinctly elevated in front. Elytra fulvous-red, rough at the base, and on this part with a few minute white hairs, behind this with a narrow patch of black tomentum at the suture joining its fellow; behind this with a line of white pubescence, very distinct, separated from the shining black suture; all the lateral part of the elytra almost impunctate. Legs dark red, femora broadly black at the tips. Hind tarsi rather densely clothed with white hairs.

Kilauea, Hawaii; August, 1895. A series of seventeen specimens exhibiting comparatively little variation. Found on the "mokihaua" tree. A single individual found on another kind of tree, "growing with and resembling pua, but with lighter, smoother bark," is a well marked variety, var. *gracilis*, of slender form, and much suffused with black, and a rather greater development of the punctuation of the elytra.

I have ventured to name this species in recognition of the great services the Hon. T. Bishop has rendered to Natural History, and the generous aid he has afforded to the Committee for investigating the fauna of the Hawaiian Islands.

PLAGITHMYSUS VICINUS, *n. sp.*

Niger, antennarum basi, pedibus elytrisque rufis, femoribus ad apicem nigris, tibiis nigricantibus; thorace vittis quatuor albidis; elytro singulo linea lata pubescente pallida, lineis his anterius furcam formantibus, furca hac cum tomento nigro repleta. *Long.*, 15—17 *mm.*

This interesting form is perhaps only a subspecies of *P. Bishopi*; nevertheless, the series of ten examples exhibits distinctions by which the two are readily separated, one of them being that the antennæ are blacker but the femora less black than they are in *P. Bishopi*. A marked difference exists in the broader line of pale pubescence on the elytron of *P. vicinus*; the thorax has the median elevation broader, and its posterior part more scabious.

Ten specimens from the western side of Mauna Loa, 3000 ft., in Hawaii, October, 1892.

PLAGITHMYSUS BILINEATUS, *n. sp.*

Brunneo-rufus, plus minusve nigro-tinctus, thorace vittis quatuor albidis, vittis externis obsoletescentibus; elytris undique crebre punctatis, singulo linea albida, anterius abrupte angulatim versus latus divergente; femoribus minus crassis, tarsis posterioribus parcius albido-vestitis. *Long.*, 11—20 *mm.*

Of a very dark sanguineous red colour, suffused with black to a variable extent, sometimes the posterior portions of the elytra are entirely black, and the undersurface may be black. The posterior hump of the pronotum has no transverse lines on it; the outer of the two pairs of thoracic vittæ is very distinct, the flanks of the prothorax are densely punctate, except for a bare shining space on the middle just below the outer vitta. The elytra are broad at the base and greatly narrowed behind; the pair of white lines on them is very distinct, and each is abruptly angularly turned outwards in front of the middle, but does not become broader; there are also several patches of scanty white hair at the base, and the pair of these behind the scutellum may, in perfectly fresh specimens, extend so far back as to almost reach the spot where the main lines commence to diverge. The femora are rather slender, gradually broader from the base to near the tip, and are more or less tinted with black at the tips; the tibiæ are black, and the tarsi are only scantily clothed with white hairs. The abdomen is polished, and has a line of white pubescence on each side; the breast is spotted at the side with white in front and behind. The sexes are extremely similar, except that the terminal joints of the antennæ are considerably longer in the male.

Kilauea, Hawaii; September, 1895. A good series.

The insect lives on the Ohia lehua tree (Metrosideros).

PLAGITHMYSUS LANAIENSIS, *n. sp.*

Nigro-rufus; thorace vix discrete vittato; elytris densissime punctatis, singulo linea albida anterius angulatim versus latus divergente.

Long., 12 *mm.*

Thorax very dark red, with the pubescence of the longitudinal spaces so short and minute that it scarcely forms vittæ; the posterior hump bearing two strongly marked transverse lines; the lower parts of the flanks but little punctured. Elytra flat above, broad at the shoulders and much narrowed behind, remarkably densely punctured, black-red, at the sides red, and also obscurely red at the base; the line of white pubescence on each narrow and very definite, its prolongation in front of the angle longer than usual, abdomen shining.

The single specimen we have received of this species is doubtless distinct from *P. bilineatus*, the only species it at all closely resembles, its excessively dense punctuation and the very minute white hairs that ornament it being conspicuous points of distinction; besides this it is different in form, and the two scabrous lines of the posterior thoracic prominence are very distinct. The individual is no doubt a male, though the terminal joints of the antennæ are shorter than they are in that sex of *P. bilineatus*.

Halepaakai, Lanai, 3000 ft. July, 1894.

PLAGITHMYSUS PERKINSI, *n. sp.*

Major, griseo-pubescens, nigro-rufus, elytris ex parte majore nigris, basi lateribusque rufescentibus, densissime punctatis, singulo linea ochracea anterius crassiore et versus latus leniter curvatim divergente; corpore subtus cum abdomine pubescente et punctato. *Long.*, 22—28 *mm.*

Thorax with the central crest very broad, strongly elevated and very scabrous along the summit, its front part projecting forwards as well as upwards in a tubercle-like shape; the pubescence does not form vittæ. Elytra very long, transversely convex, very densely punctured; the line of pallid pubescence on each very distinct, flavescent, almost sulphur-like in colour, thicker in front and very gently divergent. Femora between black and red in colour. Under-surface strongly pubescent, even the abdomen being very hairy. In the female the abdomen extends as far as the tip of the elytra, in the male it is much smaller. The antennæ differ very little in the sexes, and are shorter than usual, the three terminal joints especially so.

I have much pleasure in naming this—one of the most remarkable of the Hawaiian insects—in honour of Mr. R. C. L. Perkins, its discoverer. His indefatigable and disinterested labours call for every acknowledgment from those who are acquainted with them. *P. Perkinsi* is a great rarity, it is attached to the bastard sandal tree, Myoporum. A single specimen was found on Mauna Loa on June 25th, 1892, at an elevation of 3500 ft. Mr. Perkins was, however, quite unable to find any other examples till 1895, when he captured six specimens at Kilauea, in Hawaii, in the month of July.

PLAGITHMYSUS VARIANS, *n. sp.*

Gracilis, flavo-rufus, antennis thoraceque nigris, pedibus colore variabilibus, femorum basi semper flavo; thorace albido-vittato; elytris basi fulvo dense punctato opaco, lateribus flavis lævigatis nitidis, singulo ad suturam linea albida pubescente, anterius versus latus abrupte divergente, sutura ipsa inter lineas fuscescente. *Long.*, 8½—14½ *mm.*

Var. *a.* *Thorace rufescente.*

„ *β.* *Femoribus posterioribus tricoloratis, basi flavo, medio nigro, apice rufo.*

„ *γ.* *Elytris ante furcam albidam plaga transversa nigricante.*

This appears to be the most variable of the genus; it is very closely allied to *P. Blackburni*, and as that species is also variable, I felt sure that a close examination would result in demonstrating the specific identity of the two forms; but the result is otherwise. Certain points are constantly different in the two, and the variation of each is different; for instance, each varies in the colour of the hind femora, the black colour being deficient in some examples, but in *P. Blackburni* when the deficiency occurs it is in the middle of the femur that the black colour is wanting, the tip of the femur being black and the middle red; in *P. varians* the reverse is the case, and the middle is black, the tip red. The most constant distinctive characters are the black antennæ of *P. varians*, and the fact that the suture of the elytra between the white lines is dark, whereas it is pallid in *P. Blackburni*. In *P. varians* the elytra, except at the base, are more free from punctuation. The black colour in front of the white fork that is constantly present in *P. Blackburni*, is nearly always absent in *P. varians*, and when present it is not so definite as in *P. Blackburni*.

A very fine series has been obtained of this species, it having been met with on several occasions in the island of Hawaii, on Mauna Loa, and at Kilauea.

(*To be concluded in our next*).

NOTES ON A VISIT TO CORSICA.

BY THE RIGHT HON. LORD WALSINGHAM, M.A., LL.D., F.R.S.

A short visit to Corsica during the month of May fully confirmed the impression long gathered from various sources, especially from the accounts given by my friend Mons. A. Constant, that this would prove to be a veritable entomological paradise. Certain newspapers have lately published semi-sensational paragraphs about the rich collections and the remarkable "butterfly" that I was supposed to have brought home, and many of my friends have congratulated me upon the "beetles" they think I have added to my collection; but as the habit of the uninitiated is to ignore the limited pursuits of specialists and to include all insects under some one definition, even if they avoid the euphonious title adopted in America for this purpose, it is time to correct the impression that entomology in any wide sense was the object of my visit. I was actuated mainly by the desire to find some of the species of *Micro-Lepidoptera* described by Mann, Constant and Ragonot with which I was imperfectly acquainted.

Arriving early in May I spent a few days in the neighbourhood of Ajaccio, which was at that time a perfect garden of wild flowers, *Cistus salviæfolius* prevailing in its general profusion. Several good species occurred there, some hitherto unrecorded from Corsica, *e. g.*, *Adela paludicolella*, Z., and on the projecting point opposite to the Iles Sanguinaires I found a small *Aristotelia* (*Ergatis* olim.) allied to *brizella*, attached to *Frankenia pulverulenta*, both in the larval and perfect stages, which appears to be at present undescribed; but as Mann's collections were chiefly made in the months of June and July, many of his species in which I was specially interested failed to put in an appearance. Hoping to meet with some of the earlier larvæ, the high "divide" of Vizzavona was the next point visited, the winter snow still lying on the road between the railway and the little mountain inn, but quite melted away on the southern slopes of Monte d'Oro above and beyond the termination of the beech forest; here the vegetation was still very backward, but two specimens of one of my chief prizes were found at rest on rocks on the evening of my arrival, and gave great zest to the pursuit during the next few days, in which I secured a good series of this species, *Œcophora Ragonotella*, Cst., and of a *Talæporia* allied to *conspurcatella*, Z., which at present it would be rash to name. The habits of these two species are somewhat remarkable: nothing is known of the larva of the *Œcophora*, but the moth flies only in the early morning, the first hour after sunrise being the best time for collecting it, and seems to be specially attached to the lichen covered rocks scattered over the mountain side, where it is, however, somewhat local. The *Talæporia*, which I have not succeeded in breeding, also flies freely only at sunrise; as soon as the rays of the sun become too powerful they drop and disappear among the dwarf juniper (*Juniperus phœnicea*?) which clothes the higher slopes facing the south. A small *Coleophora* taken under the same conditions may probably prove to be new. The small thistle-heads were found infested with larvæ of *Parasia carlinella*, Stn., and among thyme larvæ of *Gelechia* (*Lita*) *artemisiella*, Tr., were abundant. Here I found also at the roots of *Rumex* the BROWN larva of *Gelechia peliella*, of which a nice series was bred, confirming the observations of Anton Schmid and Stainton, that this larva is *brown* not *green*, although it is certain that a green larva produces what appears to be the same species in this country. Here likewise the larvæ of *Butalis focella*, Cst., were very abundant on the curious woody stunted clumps of *Anthyllis Hermannii*.

Being especially anxious to study the species attached to *Santolina chamæcyparissus*, I next headed for the valley of the Tavignano, which running parallel with that of Restonica (where it does not occur), provides some of the grand mountain scenery above and behind the town of Corté. The first species noticed on this plant, both here and at Ponte alla Leccia lower down the valley, were the large green larvæ of *Tortrix Mabilliana*, Rag., which I also bred from *Micromeria græca*, a plant of which the crushed fresh leaves have the same effect on the olfactory nerves as the strongest smelling salts; this plant also produced the variety known as *pistaciana*, Rag., which, together with the ordinary form, has been recorded as feeding on *Pistacia lentiscus*. The cases of *Coleophora santolinella*, Cst., were not uncommon in the Tavignano valley, and a small *Coleophora* case was also beaten from their food-plant, for which I am unable to find a name. The larvæ in these were still feeding at the end of August, and two specimens of the perfect insect appeared on September 20th. A *Bucculatrix*, also bred from *Santolina*, is nearly allied to but distinct from *helichrysella*, Cst. A species of *Conchylis* forms long swellings in the shoots after the manner of *pontana*, Stgr. (= *œdemana*, Cst.), which is attached to *Artemisia*. My attention was first attracted to these swellings in old dry shoots, but all the larvæ found in fresh shoots were very young, and as they do not leave the galls it has been impossible to nourish them. Several good species of *Pterophoridæ* were abundant here: *Gypsochares baptodactyla*, Z., with *Pterophorus semiodactylus*, Mn., and *icterodactylus*, Mn., being especially so, while *P. malacodactylus*, Z., with a new species bred from larvæ on *Picnomon acarna* also occurred. I was also very pleased to find larvæ of *Coleophora ononidella*, Mill., and to breed this species. The curious cases with their semi-transparent wing-like flaps are local but very plentiful at Cannes, rather darker in colour than those from Corsica (Mons. Constant informs me that the light coloured cases also occur near Cannes in certain localities), but I have never before been able to rear anything from them. Other notable captures were *Nemotois chalcochrysellus*, Mn., and *Butalis tabidella*, Cst. (*nec* H.-S.), bred from *Genista corsica*.

So many plants belong exclusively to the flora of Corsica, either as named varieties or as distinct species, that the same rule may be expected to prevail among the Phytophagous insects as in the case of *Polychrosis quaggana*, Mn. (very common at Corté), *Conchylis impurana*, Mn., and *Pædisca coulerouana*, Dp., of which a variety bred from *Teucrium capitatum* appears to be so distinct from the typical South European form as almost to require a new special name. *Anisotænia ulmana*, Hb., found in the Restonica valley seemed to be confined to a space of less than ten yards square, a series of 12 or 14 taken in as many minutes by beating a bramble bush could not by any possibility have fed upon elm, but as the place was very damp these were possibly attached to *Ranunculus*; they show scarcely any variation, but belong to the banded form, and are very strongly marked.

After visiting Bastia, where time was limited, my Corsican collecting was confined to the contents of my bottle-box, in which I was fortunate enough to rear more than 200 specimens of various species collected during my short stay. To these and others I may have occasion to refer more fully at some future time.

Merton Hall, Thetford:
September, 1896.

GELECHIA PELIELLA, TR., AN ENIGMA.

BY JOHN HARTLEY DURRANT, F.E.S., MEMB. SOC. ENT. DE FRANCE.

Stainton figured and described the larva of *Gelechia peliella*, Tr., in his N. H. Tin., IX, 106–115, Pl. IV, 1 (1865), from larvæ received from Anton Schmid, found feeding on *Rumex acetosella* on May 22nd, 1859, near Soden. He described it thus:—"Dark chocolate-brown, head and second segment black; a black plate on the anal segment; spots minute, shining, black. Very active. Spins webs along the stems of *Rumex acetosella*." (*vide* Stn., Ent. An., 1860, 144, 154). Warren, Ent. Mo. Mag., XXV, 161 (1888), writes as follows:—"When last spring I found some larvæ thus feeding, but pale whitish-green in colour, with black head and second segment, I took little care of them, but was surprised to breed a pair of *peliella* ; Mr. Bird, who also took some larvæ, bred six or eight. Mr. Stainton, on being informed of the fact, suggested that probably the larva he described had changed its livery before pupation. This year, however, both Mr. Bird and Mr. Bower, as well as myself, have bred the species pretty freely from the same larvæ, none of which turned black before pupation. The only conclusion, therefore, to be arrived at is that, though undoubtedly the real larva of *peliella* must have been in the plants of *Rumex* brought back by Mr. Stainton from Germany, yet another species with a black larva was also there, and this larva Mr. Stainton described as *peliella*, overlooking the real "Simon Pure." He then proceeds to describe the green larva in detail, to which Stainton appended the following remarks, Ent. Mo. Mag., XXV, 162 (1888) :—"I find that my friend Herr Anton Schmid, who was with me when we found the larva of *G. peliella*, near Soden, in May, 1859, describes it as '*dunkelrothbraun*,' Berlin Ent. Zeit., 1863, p. 62, and the fact remains that, whereas I did breed *peliella*, I did not breed the 'other species with a black larva.' I have frequently on other occasions bred *Sericoris lacunana* from larvæ sent me, as those of some other species, so that I am not altogether unfamiliar with that kind of proceeding."

What is the cause of this diversity of opinion, in each case founded on personal observation? It should be borne in mind that *both* Stainton and Schmid who is regarded as the discoverer of the larva of *peliella* agree in describing it as dark red-brown. Stainton might have made a mistake in describing a larva given to him in error; but Schmid knew the larva of *peliella* when he pointed it out to Stainton, and subsequently described it as being dark red-brown, and if confirmation of their observations were necessary, it is supplied by Lord Walsingham, who met with the BROWN larva in Corsica, and from them bred a series, not of Warren's hypothetical species, but of the real "Simon Pure" (*vide ante*, p. 247). Can it be that we have two very closely allied species, the one with a green larva, the other with a chocolate one, which have not yet been differentiated in the imago? If this be not the case, it is very curious that there should have been a coincidence of error on the part of Stainton, of Schmid, and of Lord Walsingham. Further observation is required to settle this point, and it is possible that *peliella*, Tr., does not occur in this country, but is represented here by a closely allied species.

Merton Hall, Thetford :
September, 1896.

GELECHIA SUPPELIELLA, *sp. n.*, DISTINGUISHED FROM *PELIELLA*, Tr.

BY THE RIGHT HON. LORD WALSINGHAM, M.A., LL.D., F.R.S.

Referring to Mr. Durrant's note on *Gelechia peliella* (*ante*, p. 248) a careful comparison of bred British and European specimens has enabled me to find a character by which they can be easily and with certainty distinguished from one another; I therefore feel justified in giving a name to the English species, which has not hitherto been precisely described. It is possible, although improbable, that Douglas wrote his description from Stainton's single British specimen, but Meyrick probably had English specimens before him when his short description [HB. Br. Lp., 602) was drawn up.

Gelechia suppeliella, *sp. n.*

Antennæ greyish-brown, faintly annulated with whitish, a whitish spot at the end of the basal joint above.

Palpi, second joint cinereous, externally blotched with whitish on its basal half; apical joint dull cinereous, streaked above and tipped with whitish.

Head greyish-brown, with a whitish streak along each side from the base of the antennæ.

Thorax greyish-brown.

Fore-wings greyish-brown with dark brownish-fuscous spots, yellowish-white costal and dorsal spots at three-fourths the wing-length, and some whitish sprinkling around the dark spots and about the apex; near the base is an obscure series of three small dark brown spots, the first costal and close to the base, the second on the fold at about one-fifth from the base, the third dorsal a little nearer to the base than the second; beyond the plical spot is a larger dark brown spot on the fold, preceded and followed by some whitish scales, a second spot lies *straight* above it on the disc, a darkish length-streak almost connecting this with a third spot, both followed, and sometimes preceded, by whitish scales; above and beyond the outer spot is a somewhat triangular yellowish-white costal spot, a rather curved white dorsal spot lying scarcely beyond it and sometimes closely approaching it across the wing; near the apex is some whitish sprinkling, and the base of the grey mottled cilia are also sometimes delicately sprinkled with whitish. The pale costal spot is visible on the under-side. Exp. alar., 13–15 mm.

Hind-wings slightly shining, greyish; cilia brownish-grey.

Abdomen brownish-grey.

Hind-legs shaded with brownish-fuscous externally, tarsal joints banded with whitish-ochreous, tibiæ and tarsi on their inner sides whitish-ochreous, the tibiæ with whitish-ochreous hairs above.

Type: ♂, ♀. Mus. Wlsm. (eight specimens).

Hab.: England. Manchester (Stn.); Preston (Threlfall, Mus. Wlsm.); West Wickham (Dgl., Stn.), (? *loc.*) Warren.

This species may be distinguished from the continental form known as *peliella*, first by its green (not brown) larva; secondly, and with the utmost certainty, by the first two spots (in the important series of three) being exactly one above the other, whereas in *peliella* these spots are placed obliquely, the discal spot being always further from the base than the plical. In colour the two species are very nearly alike, but *peliella* conforms more truly to Douglas' description of the wings as "black-brown" than does *suppeliella*. There is nothing in Douglas' description [Tr. Ent. Soc. Lond., V, 200 (1849)] to indicate whether it was taken from the only British specimen known to him or from continental specimens, but Stainton's descriptions [Ins. Br. Tin., III (1854), and Nat. Hist. Tin., IX, 106–15 (1865)] were undoubtedly taken from the true *peliella*, for he distinctly notices the position of the two spots, and figures the brown larva. Treitschke's original description [Schm. Eur., X (3), 198-9 (1835)], taken from Dresden specimens, might leave us in some doubt as to which species he had before him were it not that Duponchel's original figure painted by J. Delarue, clearly indicating the oblique position of these spots, was taken from specimens received from Dresden through Fischer von Röslerstamm, who was in direct communication with von Tischer, the collector, and Treitschke, the original describer of *peliella*.

The confusion has evidently arisen from the fact that two closely allied species, although differing in both larval and perfect stages, are now known to feed precisely in the same manner on the same plant.

Merton Hall: *October* 15*th*, 1896.

ECONOMIC SPECIMENS IN THE INSECT GALLERY OF THE NATURAL HISTORY MUSEUM, SOUTH KENSINGTON.

BY C. O. WATERHOUSE, F.E.S.

A few years ago Dr. Günther, when Keeper of the Zoological Department, suggested the formation of a series of models, illustrating the habits of insects and mites, and particularly the different kinds of galls formed by them. This work he entrusted to me to a great extent, and the formation of this collection, now known as the Economic Series, has given me much pleasure, and has been, I believe, found very useful. I have had to bear two things in mind; firstly, that the general public want to see something agreeable to the eye; and, secondly, that the object must at the same time show some peculiarity in insect economy. Our object is the advancement of science, and the specimens are not an exhibition of agricultural pests, much less do we show how to destroy them. At the same time, when I have had a choice of subjects which would illustrate any particular point, I have given the preference to the insects which might be termed injurious.

The models are on stands under glass shades, and are arranged on a shelf; and above each object on the wall is a frame enclosing water-colour drawings of the insect, with the larva and pupa, when this seemed desirable, and beneath the drawing a short account of the habits of the insect. All the frames and the stands are fixed so as to prevent them being interfered with by those abnormal members of the public that delight in mischief; but they are easily set free, and can be shifted whenever this is necessary.

With one or two exceptions, all the models have been made under my superintendence from specimens collected by myself, and, so far as possible, the drawings of the insects and their larvæ have been made from living or fresh specimens.

The following is a list of the models at present exhibited, but others are in hand:—

Hazel, with buds distorted by *Phytoptus avellanæ.*
Elm, with the leaves studded with small galls of *Phytoptus ulmi.*
Maple, with leaves studded with small red galls of *Phytoptus macrorhynchus.*
Birch, with buds distorted by *Phytoptus betulæ;* the origin of "witches' brooms."
Black currant, with buds distorted by *Phytoptus ribis.*
Lime, with nail galls formed by *Phytoptus tiliæ.*
Wild rose, with galls of *Rhodites eglanteriæ.*
Ground-ivy, with large galls formed in the leaves by *Aylax glechomæ.*
Bramble, with swelling in stem caused by *Diastrophus rubi.*
Oak apples and root galls formed by *Andricus terminalis* and *Biorhiza aptera.**
Marble gall of *Cynips Kollari.*
Oak, with silk button galls of *Neuroterus numismatis.*
Oak, with spangle galls, and currant galls of *Neuroterus lenticularis* and *Spathegaster baccarum.*
Oak, with cherry galls of *Dryophanta folii.*
Rose, showing habit of leaf-cutting bee, *Megachile Willughbiella.*
Shrub, with nest of *Vespa norvegica.*
Cherry, with leaves eaten by slug-worms, the larvæ of *Blennocampa cerasi.*
Birch, with leaves rolled by weevil, *Rhynchites betulæ.*
Oak, with leaves cut and rolled by a weevil, *Attelabus curculionoides.*
[The manner in which this is done is explained by a drawing].
Turnip, with galls of a weevil, *Ceuthorhynchus sulcicollis.*
Apple, with blossom injured by a weevil, *Anthonomus pomorum.*

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* In the *Cynipidæ*, where the alternate generations are dissimilar and the insects make different galls, I have, as a matter of convenience, retained the names which have been given to them.

Mustard, showing injury caused by beetles, *Phædon cochleariæ.*

Red currant, showing habit of *Trochilium tipuliforme.*

Gooseberry and *currant*, showing habits of *Abraxas grossulariata.*

Oak, showing habit of *Tortrix viridana.*

Red currant, showing injury to young shoots caused by larvæ of *Incurvaria capitella.*

Cabbage, with diamond-back moth, *Plutella cruciferarum.*

Apple, with small ermine moth, *Hyponomeuta padella.*

Elm, with leaves curled by *Aphidæ*, *Schizoneura ulmi.*

Poplar, with purse-galls formed by *Aphidæ*, *Pemphigus bursarius.*

Red currant, with leaves blistered by *Aphis ribis.*

Oak, with leaves showing presence of *Phylloxera quercûs.*

Beech, with hairy galls on leaves, formed by a fly, *Hormomyia piligera.*

British Museum (Natural History):
September 10*th*, 1896.

ANISODACTYLUS NEMORIVAGUS (DUFTSCHM.), A BRITISH INSECT.

BY G. C. CHAMPION, F.Z.S.

The insect known to British Coleopterists under the name of *Anisodactylus* (*Harpalus*) *atricornis*, Steph., is a variety of *A. nemorivagus* (Duftschm.), and not of *A. binotatus* (Fabr.), as hitherto supposed, and Duftschmid's name must therefore be added to our list of *Carabidæ*, it antedating that of Stephens by twenty years. The two species are abundantly distinct, and they may be separated by the following characters:—

Marginal sulcus of the prothorax extending rather broadly to the anterior angles; elytra with the sides and apex broadly and distinctly pubescent in both sexes, the sides moderately sinuate near the apex; legs black or black with the tarsi reddish [*binotatus*, Fabr., *rufitarsis*, Steph., and *calceatus*, Steph.], or entirely reddish [*spurcaticornis*, Dej.] ....*binotatus*, Fabr.

Marginal sulcus of the prothorax becoming very narrow in front; elytra shorter and less parallel, with the sides very narrowly, and rarely the extreme apex, indistinctly pubescent in both sexes, the sides strongly and abruptly sinuate near the apex; size much smaller; legs black or black with the tarsi reddish [*atricornis*, Steph., and *nigricornis*, Steph. (1832)], or entirely reddish [*nemorivagus*, Duftschm. (1812), *gilvipes*, Dej. (1828)]..................*nemorivagus*, Duftschm.

The typical form of *A. nemorivagus* has not been previously recorded from Britain, but it occurs on the heaths about Woking and Chobham in company with the black-legged variety, which does not appear to have been noticed on the continent. This species has been quite plentiful about Woking during the past summer, and the almost glabrous condition of the elytra in freshly captured specimens is very noticeable when the insect is compared with *A. binotatus*. Since 1877 I have occasionally met with *A. nemorivagus* at Chobham and Woking, but never in any numbers till the present year. The red-legged form, like that of *A. binotatus*, is rare. The insect lives at the roots of heather on sandy commons, generally in company with *Harpalus honestus*, which it greatly resembles. It also occurs at Bournemouth. I am indebted to M. Bedel, of Paris, for a typical example of *A. nemorivagus* for comparison. The species is widely distributed in northern and central Europe.

Horsell, Woking: *October 9th*, 1896.

OCEANIC MIGRATION OF A NEARLY COSMOPOLITAN DRAGON-FLY (*PANTALA FLAVESCENS*, F.).

BY ROBERT McLACHLAN, F.R.S., &c.

Lieut. C. W. Baillie, R.N., Marine Superintendent of the Meteorological Office, Victoria Street, London, had the kindness to send me two examples of the above-named wide-spread Dragon-fly, with the information that they were caught at sea by Capt. Worcester, R.N.R., of the P. and O. steamer "Victoria." He also sent an extract from the ship's Meteorological Log to the following effect:—

April 11th, 1896, 11 p.m.—"Numerous dragon-flies appeared in chart room and cabin. Nearest land Keeling Island, N., 20 W., 290 miles; N.W. of Australia, S., 70 E., 900 miles." At the time the wind was moderate from eastward with heavy rain.

The foregoing notes seem to be of especial interest, not only on account of the great distance from the nearest land (the facts even pointing in the direction of migration from the Australian Continent), but also because the insects were observed *at night* and *during heavy rain*, suggesting nocturnal migration with the possibility that they were seeking shelter from the rain, or were attracted by lights in the cabin. This power of extended migration will also account for the extension of the species over the whole intertropical zone, and far beyond it on either side. And yet, notwithstanding its considerable size, it is of comparatively weak organization, the chitinous exo-skeleton being of thin texture.

Lewisham, London: *October 3rd*, 1896.

ON THE IDENTITY OF *AMPULEX FASCIATA*, JUR., AND *A. EUROPÆA*, GIR.

BY THE REV. F. D. MORICE, M.A., F.E S.

On July 9th of this year, while collecting *Hymenoptera* near Sierre, in Switzerland, I noticed a strange *Aporus*-like insect scouring rapidly along a wooden fence, close to a "grange" where I had just found specimens of the rare Chrysids *nitidula*, Fabr., and *fasciata*, Oliv. With some difficulty I secured it; but for a long time I was utterly puzzled to make out what it could possibly be. None of the books I had with me threw any light upon it, and it was quite unlike anything I had ever seen. A few days after I was at Geneva, and consulted my kind friend M. Emil Frey-Gessner, the great authority on Valaisan *Hymenoptera*; but to my surprise he also was unable to recognise it, nor could we find anything at all like it either in the University Museum or in the collections of M. de Saussure.

Some ten days after, being again at Sierre, I made diligent search in the locality where I had found this strange creature, and was rewarded by the capture of several other specimens—in all five males and one female. It was difficult to catch, as it was extremely shy and agile, and the posts and rails which it haunted, and behind, or under, which it constantly retreated when alarmed, were beset with jagged edges, projecting nails, and the like, which threatened destruction to my net, unless it were managed with great caution.

It was not until my last day in Switzerland that, by a lucky chance, I was enabled to identify this mysterious insect. Calling at the University to say good-bye to M. Frey-Gessner, I found him in the room where various old collections are preserved, including that of Jurine. This I had never seen, and he was kind enough to unlock it for me. We took out a drawer at random, and both at once uttered a cry of surprise. There, unmistakeably, was a specimen of my unknown insect, and we found attached to it a label in Jurine's own writing—*Ampulex fasciata*. It was a solitary specimen, whether male or female, I do not remember.

The insect must be extraordinarily rare. I cannot find that it has ever occurred in Switzerland since Chévrier took the specimens on which Jurine founded the species *fasciata*. As to the question whether this is identical with *europæa*, Gir., Mr. Cameron (Mem. Manchester Lit. and Philosoph. Soc. (4), i, p. 21, 1888) decides it in the affirmative, while the late Edm. André ("Species," 1894, p. 157), quoting the descriptions of Giraud and Chévrier in full, has attempted to distinguish the species as follows :—

1. Epistome pourvu d'une carène tranchante non prolongée triangulairement en avant. Ocelles distants entre eux comme chez les autres Sphégiens... *europæa*, Gir.

2. Epistome pourvu d'une carène tranchante, prolongée triangulairement en avant. Ocelles petits, très rapprochés .... *fasciata*, Jur.

After comparing my insects with the two descriptions, I am satisfied that the distinctions drawn by M. André are unreal, and that Giraud and Chévrier have both described the same species, which is identical with that found by myself.

For, first, as to the ocelli: Giraud does not say that those of his *europæa* are "distant;" he says only that they are "quite distinctly separated from one another." And this is strictly true of the ocelli in my specimens, though it is no less true that they are—as Chévrier says of the ocelli in *fasciata*, Jur.—"petits, très rapprochés."

Secondly, as to the "carène:" in my specimens it ends in about five tiny teeth, the central one being the longest, and the outermost two the shortest, so that the general appearance is quite that of such a "triangular prolongation" as Chévrier describes, while at the same time nothing could more exactly agree with the expression of Giraud, "le bord libre de cet organe" (*i. e.*, the carina) "qui cache entièrement le labre, est armé de plusieurs dents courtes et mousses."

I feel, then, no hesitation in recording my captures as specimens of *Ampulex fasciata*, Jur., = *europæa*, Gir. Being entirely black, they cannot be referred to *ruficollis*, Cam., the only other species of *Ampulex* which has been recorded as European.

Brunswick, Woking:
September, 1896.

Baccha elongata bred.—At the end of September Mr. Rollason (who, in conjunction with Mr. Newey, is making black and white drawings of the larvæ and pupæ of British *Lepidoptera*) brought me a chip box containing a specimen of *B. elongata* and its empty pupa case attached to the side of the box. A larva of *Mamestra persicariæ* had been in the box, and Mr. Rollason was under the impression the *Baccha* was bred from that. This I think cannot be so, as I am under the impression that no Syrphid has yet proved to be parasitic on Lepidopterous larvæ; probably the *Baccha* larva was introduced with a leaf of the food-plant. The empty pupa case is pear-shaped, with an elongated base; it is brown in colour with a black band across the widest part, just where the insect breaks the case to escape. Most of the genus *Syrphus* feed on Aphides, and from the similarity of the pupa case to some in this genus, it is probable they may feed on similar pabulum. Schiner, in his "Fauna Austriaca," says, "metamorphosis unknown." I should be glad to hear if any one can throw more light on the subject.—Ralph C. Bradley, Sutton Coldfield: *October*, 1896.

Syrphus guttatus as British.—In the October number of the Ent. Mo. Mag., Mr. F. C. Adams mentions, among other rare *Diptera* he has captured, *Syrphus guttatus*, and says, it has only been recorded once previously by Mr. Coryndon Matthews. This is hardly correct, as in the March number of this vol., p. 52, two females are recorded, taken by myself, one at Sutton Coldfield, the other at Barmouth. *Syrphus flavifrons*, Verr., will probably turn out to be the ♂ of this species; it lacks the two white spots just above the scutellum so characteristic of the ♀. I have three specimens taken in my garden.—Id.

Camarota as a noxious insect.—In the last number of the Wiener Ent. Zeitung, 1896, p. 247, Mr. Mik says, concerning *Camarota flavitarsis*, Meig., "The transformation of this genus has, to my knowledge, up to the present time, never been observed, and it has not been anywhere known to be noxious to cereals." In my Elencho delle publicazioni entomologiche del "Professore Camillo Rondani" (Bull. Soc. Ent. Ital., 1885, p. 160) will be found:—

No. 114. Un' altro nemico delle biade (*Camarota cerealis*, n. sp.), Giornale "La Campagna," Parma, 1873.

N.B.—E una notizia preliminare al No. 115.

No. 115. Un unovo roditore dei frumenti (*Camarota cerealis*).

Bull. Com. Agr. Ann., vi, No. 7, pp. 103–105, con fig. Estratto, Parma, 1873, p. 3.

In No. 115 Rondani says, "The species in question belongs to the genus *Camarota*, Meig., which he introduced for a single species that he called *flavitarsis*; but from his description, and from the authority of Macquart, it results that our *Camarota* is specifically different, and as it has not hitherto been distinguished from the typical *flavitarsis*, I shall give it a separate name, *C. cerealis*," &c.

The description reads very much like that of *flavitarsis*, with slight discrepancies, the principal of which is a distinct brown ring on the posterior tibiæ, which is not mentioned by Meigen.—C. R. Osten Sacken, Heidelberg: *October 1st*, 1896.

Note on Eristalis tenax, Linné, in New Zealand.—The recent extremely mild winter in New Zealand appears to have been congenial to our alien insect friend *E. tenax*. After a hot summer this Dipteron was very numerous on the chrysanthemum blooms in the autumn, and has, since the month of May, frequented the blooms of Laurestinus (*Viburnum tinus*) every calm day of sunshine. In the public gardens here, where the Laurestinus blossoms splendidly, the flies were numerous on the blooms until July 5th. On that date and for several nights following there were five degrees of frost, each followed by days of warm sunshine. The frosty nights certainly chilled them, as since July 9th they gradually lessened in number and also became less active. The 24th and 25th of the present month were unusually calm, sultry days for spring weather. On these dates I observed a number of them on the Laurestinus blooms, generally on the sunny side of the shrub. Throughout the last two summers the larvæ of this interesting Dipteron have been numerous in a large barrel we use for "brewing" liquid manure.—W. W. Smith, Ashburton, N. Z.: *August 28th*, 1896.

Trichoptera, &c., in North Devon.—In Ent. Mo. Mag., vol. xxvi, p. 316, Mr. McLachlan records the species of *Trichoptera* observed by himself and two friends on Exmoor in September, 1890, and by Mr. Stanley Edwards near Lynton, North Devon, from August 8th to September 18th, 1890. During a short stay at Lynton from June 9th to 22nd, although most of my time was otherwise engaged, I wa able to add the following species to the Lynton list, and to assure myself of a ric harvest next year:—*Lasiocephala basalis*, *Diplectrona felix*, *Psychomyia pusilla*, *Lype phœopa*, and *Glossosoma Boltoni*, very large and dark. Of the species previously recorded, as above, *Hydropsyche instabilis* was out in countless myriads, and *Philopotamus montanus* was generally abundant and very brightly coloured. I also took two *Osmylus chrysops*. In the East Lynn I secured a short series of *Perla maxima* and a few *Perla cephalotes*, the latter species not being detected until Mr. K. J. Morton kindly drew my attention to the differences between the species. *Chloroperla grammatica* and *Isopteryx tripunctata* were common, as also was a *Leuctra* not yet quite determined. I trust next year to largely increase the list of Lynton *Neuroptera*.—C. A. Briggs, 55, Lincoln's Inn Fields: *September 2nd*, 1896.

Notes on a few Neuroptera from the Tyrol.—The greater part of last month and the commencement of the present were spent by my friends Messrs. Champion and Lemann in the Tyrol. They kindly collected a few *Neuroptera* (in the broad sense) which they handed over to me, and as an item towards a local fauna that may possibly be of use hereafter, I have given a list of them.

The approximate elevations of the localities mentioned are as follows:—Cortina, 3900 ft.; Mendel, 4400 feet; Campiglio, 4900 ft.; Sorapis, 6–7000 ft.

Trichoptera.—*Limnophilus rhombicus*, L., *L. flavicornis*, F. (the anterior wings strongly sprinkled with dark markings), and *L. ignavus*, McL. (one ♀); *Sericostoma* sp. (♀ only); *Odontocerum albicorne*, Sc.; *Philopotamus ludificatus*, McL.; *Tinodes dives*, Pict. All from Mendel.

Planipennia.—*Panorpa alpina*, Rbr., Sorapis and Mendel, *P. communis*, L., Campiglio and Mendel, *P. germanica*, L., var. *apicalis*, Steph., Cortina, *P. cognata*, Rbr., Campiglio; *Rhaphidia flavipes*, Stein, Campiglio; *Osmylus chrysops*, L., Mendel (common); *Hemerobius nitidulus*, F., Mendel, *H. concinnus*, Steph., var. 4-*fasciatus*, Reut., Campiglio and Mendel; *Megalomus hirtus*, L., Campiglio; *Chrysopa ventralis*, C., *C. prasina*, Burm. (*aspersa*, Wesm.), and *C. vulgaris*, Schnd., Mendel.

Pseudo-Neuroptera.—*Perla maxima*, Sc., Campiglio (three ♂, in colour nearly as dark as Scotch examples, but with ample wings); *Nemoura variegata*, Oliv., Campiglio; *Sympetrum striolatum*, Charp., and *S. meridionale*, Selys (one), Campiglio; *Somatochlora arctica*, Zett., Mendel (a pair, ♂ ♀); *Cordulegaster bidentatus*, Selys, Campiglio (one ♀).—R. McLachlan, Lewisham, London: *August 19th*, 1896.

Coleoptera at Broadstairs.—While staying with friends near Broadstairs at the beginning of August I discovered that some of their early potatoes still remained in the ground, so I promptly relieved the gardener of the task of lifting them, and was delighted to take from the decaying seed almost all the *Coleoptera* which used to occur to me, under similar circumstances, in the same neighbourhood ten years ago. *Adelops Wollastoni*, as usual, literally abounded ; I several times found ten or fifteen specimens, and in one case over thirty, in a single potato. Of *Anommatus 12-striatus* I could only find a single example ; but very few of the decaying seed potatoes were in the right condition ; it likes them dry and almost powdery. *Oxytelus insecatus* was abundant, in wet and spongy seed ; I used to take it singly, and I do not think that it is generally plentiful anywhere, but this time I succeeded in taking over fifty examples, of which nearly twenty came from a single potato. *Rhizophagus perforatus*, of which I had previously taken a single specimen in this way, was also present in some numbers. Of *Falagria thoracica*, which I used to take abundantly, I got one ; but I think that I was rather too late for it. My best capture, however, was the very remarkable *Langelandia anophthalma*, which had previously only been taken in my own garden at St. Peter's (half a mile distant), where I discovered it in 1886 ; I could only find three examples, but it was most satisfactory to ascertain that the insect is still in its old locality. It lives in the drier seed, is exceedingly sluggish—in striking contrast to *Adelops*—and is very easily overlooked.

Earlier in the year (May 2nd) I picked up a specimen of the rare *Meloë rugosus* as it was crawling in the road close to the same garden, and almost on the identical spot where I took my other example of the insect on December 1st, 1887. I searched the immediate neighbourhood for further specimens without success.—Theodore Wood, 23, Brodrick Road, Upper Tooting, S.W. : *September 21st*, 1896.

Lyctus brunneus, Steph., at Wandsworth.—About a year ago I was consulted by one of our parishioners, living on the Wandsworth side of Wandsworth Common, with reference to a table in her drawing room, which was perforated by some small wood-boring beetle. I asked her, if possible, to capture a specimen and let me see it ; and accordingly, early in July, the insect arrived. To my great surprise and delight it proved to be an example of *Lyctus brunneus*, which I do not think has been recorded since Mr. S. Stevens turned it up at Norwood in 1879 and the two following years. I at once posted off to the house, and further investigation resulted in the capture of seven more specimens.—Id.

Coleoptera in the Plymouth district.—Having omitted to note in the Ent. Mo. Mag. any of my captures as they have occurred since December, 1894, I now send a brief account of those most worthy of mention :—

Elaphrus uliginosus, six specimens, in company with *E. cupreus*, by "treading" boggy ground around a rivulet ; the latter swarmed, but *E. uliginosus* only came at the rate of one specimen for upwards of an hour's work, whilst *Stenus Guynemeri* (1), *Lathrobium angustatum* (1), and one or two decent *Hemiptera* were all that relieved the intervals. In shingle and in the river bed near at hand, dried up by the drought of the past summer, *Bembidium punctulatum*, *B. atrocæruleum*, and commoner species swarmed, whilst *B. monticola* was frequently found by loosening the ground at the junction of the shingly sand with the soil proper in the banks. *Coccinella 5-punctata* was also not rare in the shingle. By "treading" in the decaying leaves at the edge of a stagnant pool *Ocalea latipennis* and *O. castanea* were freely taken ; *O. badia*, a single specimen, in moss on a stone. In moss on boulders in the middle of the River Meavy—in the running stream, but not covered by water—twenty-four specimens of *Gnypeta cœrulea* were taken at various times, and a single example of *Octhebius exsculptus*; under stones in the same river *Elmis paralellopipedus* occurred plentifully, but in a very restricted area; *Chœtarthria seminulum*, in *Sphagnum*, on Ugborough Beacon, and *Pterostichus æthiops* was again taken in its old locality close by. Felled oak yielded *Trypodendron domesticum*, and, under its bark, pupæ of *Trachodes hispidus*, of which six matured. *Haplocnemus nigricornis*, one example by sweeping, in July, and several from moss on oaks in the winter. Single specimens of the following beetles have also been taken, viz., *Taphria nivalis*, *Philonthus carbonarius*, *Sunius filiformis*, *Silpha nigrita*, *Conipora orbiculata*, *Cryptophagus ruficornis*, *Cassida hemisphærica*, *C. sanguinolenta*, and *Balaninus cerasorum* (the two last-named were caught and handed to me by Mr. C. G. Bignell), and a damaged example of *Blaps mortisaga*, forwarded by a friend at the G. W. Docks.

I must also record *Rhinocyllus conicus (latirostris)*, of which about sixty specimens were given to me by the late Major J. N. Still, from Seaton, Devon. In his letter accompanying the beetles he observes: "They were found entirely on the 'slender thistle,' *Carduus pycnocephalus*." I have a few examples left for friends who want them.—James H. Keys, 7, Whimple Street, Plymouth: *Oct.* 11*th*, 1896.

Histeridæ, &c., associated with owls.—About three weeks ago, while rambling over the meadows about a mile from Sheerness, I came on an old hollow elm tree, which had evidently been tenanted at some time by a pair of owls. At the bottom of the hollow was a large accumulation of damp rotten wood, full of the bones of small birds and mice which had been the prey of the owls, as well as quantities of the pellets or "castings" thrown up by the latter; the whole forming a very likely-looking compost to attract rare *Coleoptera*. An examination of this stuff produced two decidedly scarce *Histeridæ*, *Dendrophilus punctatus* and *Gnathoncus nannetensis*, in fair numbers, with an occasional *Trox scaber*, *Mycetœa hirta*, in plenty, &c. Passing the tree a day or two ago, I added a third Histerid, *Carcinops* 14-*striata*, to the species already found in it. I may mention that in another hollow elm not far off, *Cossonus ferrugineus* must at one time have been very common, to judge from the quantity of broken remains of this species, though I could not find a single example alive; and in this tree three specimens of the rare little *Quedius chrysurus* were met with in very wet rotten wood-mould.—James J. Walker, 23, Ranelagh Road, Sheerness: *October* 13*th*, 1896.

Carabus glabratus, Pk., on Scafell.—At the beginning of August I found a fine pair of *Carabus glabratus* on the slopes of Scafell; I was for some weeks in the locality but did not see another specimen, although earlier in the year I believe it is not uncommon on the fells. Owing probably to the dry weather beetles were extremely scarce, the only one that could be called at all common being *Geotrupes sylvaticus*; the dark form of *Carabus catenulatus* was occasionally to be met with, and near Mickledore Chasm I found a single *Aphodius*, which appears to be a small dark form of *A. lapponum*.—W. W. Fowler, Lincoln: *October* 17*th*, 1896.

The recent abundance of Tortrix viridana.—I have been much interested in reading about the recent abundance of *Tortrix viridana*. Here (in Dorset) the contrary has been the case. Last year it was much commoner than this. Larvæ generally have been scarce, with the exception of those of *Hiberniæ* and *Tæniocampæ* in the spring. I have been examining the oak trees to-day, and have never seen better foliage.—C. W. Dale, Manor House, Glanvilles Wootton, Sherborne, Dorset: *September 14th*, 1896.

Abundance of Gonepteryx rhamni.—*Gonepteryx rhamni* has been unusually common here all through June, July and August, but I have not seen many since. In that period I have seen as many as a dozen in my garden in a day. They generally appear in spring and autumn, but this year they favoured the summer months. I suppose that it would be difficult to prove whether the June specimens had hibernated or not; but I saw no worn or battered individuals among them, and they continued without intermission throughout July to the middle of August. Surely there would be plenty of time in such a warm spring as we have had this year for larvæ to feed up from April to June.—Id.

Xanthia aurago feeding on hornbeam.—Last autumn Mr. Barnes, of Reading, sent me a few eggs of *Xanthia aurago*, which he had induced a female to lay in the crevices of the bark of a piece of maple. These eggs hatched out this spring before the maple was ready, and I was in a fix as to what to give them to eat. In looking round the Parks here to see what I could find for them, I saw a hornbeam tree just showing green buds, and thinking it probable that anything which eats beech would also eat hornbeam, I brought a small branch and placed the newly-hatched larvæ on it, and they buried themselves at once in the buds; I fed them all through from the same tree. They grew very rapidly. I was away one week just after Easter, and on my return was astonished at the progress they had made. When the buds first expanded into small leaves the caterpillars spun them together into little tents to live in, and this they continued to do till advanced in the last stage, when, like most of the leaf spinners, they grew bolder and more careless, and were often exposed. Generally they lived two together in a tent, sometimes even three together. By the middle of May they were full-fed, when they hid themselves amongst the leaves and rubbish at the bottom of the cage, each one spinning itself a little cocoon, and there they remained, like the others of the genus which I have bred, in a state of inactivity for about seven weeks before changing to pupæ. The moths emerged late in August. —W. Holland, 69, Observatory Street, Oxford: *October*, 1896.

Leucania favicolor, Barrett.—Between June 23rd and July 3rd last I was fortunate enough to capture seven more examples of this new species, and have no doubt that, had I not been ordered away to take part in the naval manœuvres, I should have obtained more of them. These examples were submitted to Mr. Barrett before I left England. They agree accurately with my original more typical specimens, and do not show any particular tendency toward the startling row of black dots with which one of my earlier female specimens is ornamented. During the same period I took several of the dark red variety of *L. pallens*, in which the white nervures are obscured. I have also been fortunate enough this past season to rear from larvæ found in my own neighbourhood in Essex some very beautiful specimens of *L. straminea*, richly tinged with reddish; and one example of the more ordinary colouring, but having a broad, conspicuous, shaded black stripe from the base two-thirds the length of the fore-wings.—GERVASE F. MATHEW, H.M.S. "Hawke," Salonica: *October* 12*th*, 1896.

Argyresthia Gœdartella in Phytoptus clusters.—Some time ago our old friend and former co-editor, Dr. H. G. Knaggs, sent me a lot of curious gall-like bunches or tufts of birch which had been given him by his next door neighbour, Mr. Meakin, and were obtained from a birch tree growing in his garden in the Camden Road. There were Lepidopterous larvæ in them, and it was desirable to know to what species they belonged. The gall-like bunches were, I suppose, produced by *Phytoptus betulæ*, but they were not like the great masses of small twigs which in the country sometimes look as large as a magpie's nest, and excite the wonder of the passer-by, and which are taken possession of by *Pyralis glaucinalis* as a suitable habitation for its larvæ; being actually mere aggregations of *leaf* buds, not twigs at all, but really soft enough to be broken up and pulverized by the fingers. Moreover, the London atmosphere had left its mark upon them, much as though they had been rubbed in a chimney. The bunches were none of them large, and I hardly hoped to rear anything from them; but in due time appeared scores of *Argyresthia Gœdartella*, some with the usual light silvery markings, others wholly of the brilliant golden hue. They did not appear to have fed in the more natural buds at all, but emerged from the densest, most crowded, portions of the masses of buds, and were of equal beauty and size to those produced under the most favourable circumstances.—CHAS. G. BARRETT, 39, Linden Grove, Nunhead, S.E.: *October* 17*th*, 1896.

Obituary.

Joseph Chappell.—The death of Mr. Joseph Chappell at Manchester in his sixty-seventh year, is announced in the "Manchester City News" of October 10th. He had an unrivalled knowledge of the *Coleoptera* and *Lepidoptera* of the Manchester district, in which he had lived and collected for over forty years. For many years he was a mechanic at Sir Joseph Whitworth's works, but about twelve years ago underwent amputation of one of his legs. During the Jubilee Exhibition, held in Manchester in 1887, he had charge of the living silk-bearing *Lepidoptera*. He was an Honorary Member of the Lancashire and Cheshire Entomological Society. His extensive collections had recently been purchased by Mr. Schill, of Cheadle, near Manchester. His geniality of disposition endeared him to all with whom he came in contact.—J. HAROLD BAILEY.

Societies.

BIRMINGHAM ENTOMOLOGICAL SOCIETY: *September* 21*st*, 1896.—Mr. P. W. ABBOTT, Vice-President, in the Chair.

Mr. R. C. Bradley showed *Ephestia Kühniella*, bred from larvæ sent from Liverpool. Mr. G. W. Wynn, a series of *Orthosia suspecta* from Sutton Park; *Chœrocampa porcellus*, one from Northfield; *Cymatophora duplaris* from Sutton; and *Luperina cespitis*, *Eugonia erosaria* (a series), *Pterostoma palpina*, *Notodonta* *ziczac*, *Grapta c-album* (a series of the pale second brood), and *Cerura bifida*, all from Wyre Forest. Mr. E. C. Rossiter, *Acherontia Atropos* from Norfolk; *Bombyx rubi*, nice brown specimens from the Hebrides; *Acidalia imitaria* from N. Wales; *Thecla w-album* from Arley, where he had discovered it on the railway bank between Arley and Highley; it has not hitherto been known in the Birmingham district, excepting by a chance specimen, but was not uncommon in this one spot; also *Cœnonympha Davus*, a series from the Hebrides, *Scodiona belgiaria* from the Hebrides, and *Nudaria mundana* from Arley. Mr. J. T. Fountain, a fine series of *Selidosema ericetaria* from the Dorsetshire coast; *Papilio Machaon* bred from Wicken larvæ; *Colias Edusa* from Knowle, and with var. *Helice* from Dorsetshire; and a long fine bred series of *Gortyna ochracea* from various places near to Birmingham. Mr. P. W. Abbott, a specimen of *Leucania vitellina*, which was taken by Mr. John Hodges at Freshwater, Isle of Wight, at sugar on the night of September 8th during a thunderstorm. Messrs. A. H. Martineau and C. J. Wainwright, a number of insects taken at Wyre Forest during a few days spent together there last Whitsuntide: they included, among the *Hymenoptera—Pompilus viaticus* and *spissus*, *Osmia spinulosa*, and *Passalæcus gracilis*; amongst the *Diptera—Conops vesicularis*, *Doros conopseus* (one), *Dioctria atricapilla*, *D. œlandica*, and nice series of *Chrysotoxum sylvarum*, *Syrphus nitidicollis*, and *Pipizella virens*; among the *Lepidoptera—Hadena genistæ*, *Tephrosia extersaria*, *Lobophora viretata* and *L. halterata*; also a nice series of *Eucera longicornis* ♂. Mr. Wainwright showed and presented to the library a map he had drawn of the area selected by Mr. Kenrick for adoption by the Society as the Birmingham district.—COLBRAN J. WAINWRIGHT, *Hon. Secretary.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *September* 10*th*, 1896.—W. MANSBRIDGE, Esq., F.E.S., in the Chair.

Mr. A. E. Hall exhibited a gravid female of *Termes bellicosus* from Cape Coast Castle, and a series of captured *Callimorpha Hera* from Newton Abbot. Mr. Lucas, a female of *Platetrum depressum* having the male blue coloration, a male *Calopteryx virgo*, having the right fore-wing without the dark pigment, and a pair of the grasshopper *Thamnotrizon cinereum* from the New Forest. Mr. Montgomery, a bred series of *Dianthœcia capsincola* from Eastbourue, one specimen had a wide submarginal line and a marginal area without the wavy lines.

September 24*th*, 1896.—C. G. BARRETT, Esq., F.E.S., in the Chair.

Mr. R. Adkin exhibited living larvæ of *Cyaniris Argiolus* in sitû on the buds of ivy blossom from Eastbourne, also full fed larvæ of *Aplecta occulta*. Mr. Filer, a fine variety of *Enodia hyperanthus*, having the white spots surrounded by yellow rings only, the black rings being entirely obsolete; it was taken in Essex. Mr. Moore, specimens of *Thelyphonus giganteus*, a species midway between the Scorpions and the Spiders, from Florida, and contributed notes; also he showed specimens of *Polistes annularis* and a nest. Mr. Turner, a varied series of *Noctua xanthographa*, including a black form, a pale form, a red form, and a form with unusually well defined stigmata; a very dark *Agrotis segetum* from Kent; a *Triphæna pronuba* with a remnant of a discoidal spot; and two bred *Acronycta aceris* with the veins of the secondaries deeply lined with black. Mr. Montgomery, specimens of *Noctua ditrapezium* from South Yorks. Mr. Barrett, very long and varied series of *Tephrosia* *biundularia* and *T. crepuscularia*, and sought to establish the identity of the two forms. After considerable discussion, it was decided to adjourn the matter for further consideration at the next Meeting, to give Members the opportunity of exhibiting their own series.

October 8th, 1896.—T. W. HALL, Esq., F.E.S., Vice-President, in the Chair.

Mr. Ficklin exhibited several species of *Lepidoptera* set in their natural positions of rest, thus showing the pattern of the transverse markings which adapted them to their surroundings. Mr. Carpenter, a male specimen of *Polyommatus* (*Lycæna*) *Icarus*, with a completely bleached hind-wing, from Folkestone; several female examples of *Pararge Megæra*, bred from Ranmore Common, having a tendency to form a broad black median band; and a bred series of *Chrysophanus* (*Polyommatus*) *Phlæas* from Abbott's Wood, having well developed blue spots on the hind-wings. Mr. H. Moore, two large species of *Orthoptera* from Florida, viz., *Romalea microptera* and *Cyrtacanthacris subpsittacea*. Mr. J. T. Carrington, *Calophasia platyptera*, a species of moth new to Britain, taken by himself between Shoreham and Brighton on September 14th, 1896; the species is closely allied to the "shark moths," and is a native of Central and Southern Europe; the larva feeds upon toadflax. Mr. Ashdown, a specimen of the rare Coleopteron, *Molorchus minor*, from Mickleham, and a black var. of *Toxotus meridianus* from Surrey. Mr. Adkin, a bred series of *Calocampa vetusta* from Sutherland, and a bred second brood of *Acidalia virgularia* (*incanaria*) from Brockley. Mr. Lucas, a hitherto unnoted variety of *Pyrameis* (*Vanessa*) *Atalanta*, having the indistinct deep black blotches which are interior to the red marginal band of the hind-wings, with well marked blue centres; it was captured at Claygate by Mr. H. L. Hearsum, of Kingston. Mr. Barrett, a pupa case and cocoon of *Pamphila* (*Hesperia*) *comma*, which had been found by Mr. Hamm, of Reading, and also some eggs which had been deposited on stems of grass by an observed female. A discussion took place as to what was the usual food-plant of the species; the general opinion was that it was a grass feeder, as most Pamphilids. Mr. C. A. Briggs, a fly taken from a starling, presumably *Ornithomyia avicularia*, one of the *Hippoboscidæ* infesting birds. Mr. H. J. Turner, a living specimen of *Uropteryx sambucata*, taken in his garden on October 8th, and no doubt a second brood individual.—HY. J. TURNER, *Hon. Secretary*.

COMMITTEE FOR THE PROTECTION OF BRITISH LEPIDOPTERA IN DANGER OF EXTERMINATION.

The first Meeting of this Committee, appointed by the Entomological Society of London, was held at the Society's Rooms on October 14th, 1896. Professor Meldola, President of the Society, in the Chair.

Letters from the City of London Entomological and Natural History Society, the North London Natural History Society, and the Leicester Literary and Philosophical Society, expressing warm sympathy with the object of the Committee, were read. After discussion of the best methods of securing the object of the Committee, it was resolved to invite information as to species in special danger of extermination, with a view to future action.—CHAS. G. BARRETT, *Hon. Secretary*, 39, Linden Grove, Nunhead, S.E.

SURVIVAL OF *ACHERONTIA ATROPOS* AFTER BEING STRUCK BY AN ICHNEUMON.

BY THE REV. T. A. MARSHALL, M.A., F.E.S.

Nothing is more certain in general than the death of any Lepidopterous insect infested by an ichneumon: in some cases it perishes while still a larva, in others the chrysalis is formed before death, but as a rule, the imago is never produced. The following fact, however, shows that under artificial circumstances a different result is possible.

My friend the Rev. A. P. Morres, of Salisbury, has frequently reared caterpillars of *Acherontia Atropos* found in a potato ground near that city; he generally forces them by artificial warmth, which in no way interferes with their healthy development. One of these caterpillars, bred under these conditions during the present year, attained its full growth and went underground in the usual way, emerging about six weeks afterwards as a perfect moth. On proceeding to stuff the body, Mr. Morres was surprised to find in the inside a large parasitic maggot, which he has sent to me. It is upwards of 10 millimétres in length, with a stout cylindrical body, at first of a greyish-pink, but becoming, after exposure to the air, dull olive-green. A minute description of it would be useless, the species being unknown, and the general appearance of these creatures having been often described. Probably it belongs to one of the true Ichneumons of large size, which are known to be solitary parasites, and are more likely than others to select the *Sphingidæ* as appropriate victims.

From the caterpillar point of view, we have here only an instance of tenacity of life under trying circumstances; any further considerations must be based upon theory, and Mr. Morres's supposition seems to be the only one admissible. He remarks that the *Atropos* larva when first brought to him was about two-thirds grown, and exhibited a black speck on its body, whence he inferred that it had been attacked by some parasite. In the normal course of things the death of the *Atropos* larva after its change to a chrysalis, and the production of a living ichneumon, would inevitably have taken place some time next spring. But the development of the chrysalis having been artificially hastened, the parasite had no time to cause its death, and the exhaustion of vital juices was not sufficient to prevent the final metamorphosis. Hence the phenomenon of a half-grown parasite being found in the body of a perfect moth.

The eventual death of the moth from the action of the parasite is probable, but not quite certain. It would seem to depend upon two doubtful questions: (1) What is the natural duration of the life of an *Atropos*? and (2) Would the robust constitution, of which proof has already been given, enable it to hold out till the parasite had escaped from its body? The single perforation of the cuticle necessary to permit the issue of the ichneumon might not be mortal in its effects. The fatal result in other cases is believed to depend partly upon the breaking up of the tracheal system by numerous perforations, and partly upon exhaustion of the vital forces. The moth in question would only be subject to the first of these injuries in a very mild degree; and its great bulk and strength might enable it, as heretofore, to defy the second. It seems, therefore, not unreasonable to suppose that, if left to nature, it would ultimately have recovered.

Botusfleming Rectory:
October 27th, 1896.

TEPHROSIA BIUNDULARIA AND *CREPUSCULARIA.*

BY JOHN E. ROBSON, F.E.S.

I have previously ventured to differ from Mr. Barrett respecting these species. On the former occasion Mr. Barrett told us specimens had been sent him which he was unable to distinguish, but he admitted the examples were selected as a puzzle, and he had no particulars of the time of their occurrence. This seemed to me a very small ground for putting together two species, which, whatever may be the general superficial resemblance, do not occur at the same time of year, and which have a marked difference in colour in a state of nature. Of which, moreover, one species is almost confined to southern woods, and is frequently double brooded (perhaps always), and the other is more generally distributed, but is rarely double brooded, even in the south. Mr. Barrett has now had an opportunity of examining a second brood of both species from one locality, occurring during the exceptional year now ending. He finds them distinctly different from each other and from the early broods; yet, because the specimens of the second brood of what we call *crepuscularia* have a white ground colour, he says, "the second brood of the brown *crepuscularia* is obviously *biundularia*," and concludes that "the remaining evidence relied on by those maintaining the distinctness of the two forms, as species, is swept away."

It may be my dullness, but it certainly appears to me that the evidence in question tells against and not in favour of Mr. Barrett's view. That the second brood in each case differs from the first and from each other, is surely of more importance than that the second brood of *crepuscularia* had a white ground-colour like the first brood of *biundularia*. Most of us have reared a second brood of the "Thorns." All I have seen are smaller and less distinctly marked than the first brood, and I have understood this was a result of the shorter time for development. I have only once had a second brood of *biundularia* here (*crepuscularia* does not occur). They were smaller, less distinctly marked, more suffused than the type, and the ground-colour not so white. This confirms Mr. Barrett's experience, for he tells us that the second brood of *biundularia* were "actually more tinged with brown than the type." The conclusion that Mr. Barrett arrives at that "the second brood of the brown *crepuscularia* is obviously *biundularia*," should, therefore, be carried one step further, and we should say, the second brood of the white *biundularia* is "obviously" *crepuscularia*.

We are now in this position. We know that *crepuscularia* appears in the south in March and April, is brownish, and produces a second brood much whiter than the parents; that *biundularia* occurs generally throughout the country in May and June, is whiter, and when a second brood appears, it is more obscurely marked and browner than the early brood. Surely all these different characteristics point to two species, not one.

Hartlepool: *October*, 1896.

[My friend Mr. Robson's statement of the case is very fair and reasonable; but he is under more than one disadvantage: he has not seen the specimens; moreover, he has quoted my remarks I think from memory. I did not write that the second brood of *T. biundularia* were "actually more tinged with brown than the *type*," but "than the *others*," the second brood of *crepuscularia* of which I had been writing. As a fact the colouring is curiously crossed; in Mrs. Bazett's second brood of the early brown form it is *greyish*-white without a tinge of brown, but in the second brood of the white later form there is a tinge of *brown* and no grey. To my own judgment this indicates identity, and not distinctness of species. Mr. Robson labours under another disadvantage, in which he is not alone, of not having seen the German and Hungarian specimens "selected" and others which I was able to exhibit the other evening at the South London Society, and which are extremely curious; nor the enormous series (two drawers and a half exhibited by Mr. Tutt and two drawers by Mr. J. Henderson) in which the arbitrary nature of the separation of the two forms into species seemed to me to be evident. Moreover, he also has himself reared a second brood of *T. biundularia* (the form found in Durham) in the year, and so further helped to sweep away the idea that this form is only single-brooded.

It so happens that another interesting piece of evidence has just come to hand. Mr. G. O. Day, of Knutsford, has most obligingly forwarded to Mrs. Bazett his own (very different) series of the supposed two species, and has permitted her to send them on to me. Among these are no second brood examples, and none of the southern brown form. The nearest approach to this is in two specimens such as I took at Cannock Chase in June, with white ground dusted with brownish, and very pretty, complete, light brown markings. These were taken on May 25th on larch trunks at Grange-over-Sands, Lancashire; and with them a similar specimen, but devoid of the usual conspicuous dark blotch beyond the middle of the fore-wings, another very white and with faint markings, and two considerably dusted with dark smoky-brown. These Mr. Day had, very naturally, placed in his collection as *T. crepuscularia*. The other series (*biundularia*) consists of seventeen specimens, all from Delamere Forest, all very dark smoky-grey or blackish, or varying in that direction. One is of a smooth smoky-blackish without markings, except that the subterminal white line is distinct on all the wings, it is the blackest of the series, and was taken on March 31st, 1893; another, the palest of the series, smoky-white, abundantly dusted with smoky-grey, and showing the usual markings in black-brown, was taken on March 23rd of this year. The other fifteen are intermediate between these two, and very much alike, excessively suffused with a dusting of smoky-black, but all showing the usual markings in some degree; eight were taken on April 26th, 1893, the rest in May of the present year. These dates, in connection with the characteristics of the specimens, should be carefully noted. Surely it is not reasonable to base distinctness of species on mere dates of appearance in the face of such results as these? And surely, if it were not already done, Mr. Robson's evidence would sweep away the myth of single-broodedness in one form as against double-broodedness in the other! Should this be conceded, the fact of a curious form of dimorphism existing in this species would seem to be established, and the evidence of distinctness would appear, to my judgment at any rate, to have arrived at an "irreducible minimum," namely, the ipse dixit of those who say "I will undertake always to separate the two species."—CHAS. G. BARRETT, *November 4th*, 1896].

SILVANUS SURINAMENSIS (LINN.).

BY G. C. CHAMPION, F.Z.S.

Several closely allied species are confused under this name in collections, and as three of them are cosmopolitan it may be useful to call the attention of British Coleopterists to the subject. At present I have only been able to detect one species, *S. surinamensis*, in British collections; perhaps others may be more fortunate, as *S. mercator*, and perhaps *S. bicornis*, are certain to be found here eventually. *S. mercator* has recently been identified in North America.* The following Table is chiefly taken from M. Guillebeau's "Note sur les *Silvanus* du groupe de *surinamensis*" [Rev. d'Ent., ix, pp. 220–223 (1890)]. The sexual characters of *S. surinamensis* do not appear to have been noticed by British writers.

a. Temples (the cheeks or post-ocular portions of the head) long, equalling two-thirds of the diameter of the eyes; thoracic grooves equal.

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* *cf.* Chittenden, Canad. Entom., xxviii, p. 197 (August, 1896).

♂. Supra-antennary ridge prominent, angular behind, sometimes forming two horns in front; posterior femora dentate; posterior trochanters large, terminating in a sharp spine.

♀. Supra-antennary ridge feebly developed, unarmed; posterior femora unarmed; posterior trochanters very small, simple.

a′. Head narrower in front; supra-antennary ridge less distinct; the punctuation of the head and thorax finer; scutellum nearly twice as broad as long, rounded behind; the punctuation of the elytra fine, the pubescence longer, the hairs reaching from one puncture to the other...*surinamensis*, L.

b′. Head broader in front; supra-antennary ridge more distinct; the punctuation of the head and thorax, especially that of the head, evidently stronger; scutellum at least three times as broad as long, scarcely rounded behind; the punctuation of the elytra more distinct, the pubescence shorter, the hairs not reaching from one puncture to the other ....*bicornis*, Er.

b. Temples moderately long, equalling one-third of the diameter of the eyes, tuberculiform; thoracic grooves unequal, the lateral twice as wide as the median. ♀ (♂ unknown)...*abeillei*, Guill.

c. Temples very small, tuberculiform, equalling one-fifth of the diameter of the eyes; thoracic grooves equal.

♂. Head and posterior trochanters unarmed; posterior femora dentate.

♀. Posterior femora unarmed; posterior trochanters very small, simple... *mercator*, Fauv.*

S. surinamensis is by far the most abundant species; it has on more than one occasion been found "out of doors," under bark, in England.

S. bicornis is recorded from Marseilles, Toulon, Nice, Mentone, Algeria, &c. I have it from Cephalonia (*Walker*).

S. abeillei is described from a single specimen (♀) from Palestine.

S. mercator (for specimens of which I am indebted to M. Fauvel) is recorded from Toulon, Marseilles, Nice, Rouen, Lyons, New Caledonia, many localities in North America, &c. It has occurred at Rouen in shipments of ground-nuts (*Arachis*), with *Palorus subdepressus*, Woll.; and on one occasion was found under the bark of planes, near corn granaries.

The genus *Palorus* affords a parallel case to the present, several nearly-allied cosmopolitan species belonging to it having long passed under one specific name.†

Horsell, Woking: *October 3rd*, 1896.

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* Rev. d'Ent., viii, p. 132, note (1889).

† Since my remarks on this genus were written (*antea*, pp. 26–30), *P. Ratzeburgi* and *P. subdepressus* have been recognised in North America, *cf.* Chittenden, Ent. News, vii, p. 138 (May, 1896).

NOTE ON *PAROMALUS LUBERTI*, MARS., AND DESCRIPTION OF A REMARKABLE SPECIES OF THE GENUS FROM SUMATRA.

BY G. LEWIS, F.L.S.

I found at Gibraltar last spring a *Paromalus* in fair abundance in the rotting trunks of an *Opuntia*, which were stacked one over another in the rubbish department of the public gardens. These specimens agree precisely with examples of *P. Luberti*, Mars., which I have from Mexico, so it seems highly probable that the species has been introduced into Europe with the prickly pear. This probability is also strengthened by the fact that the species has a sutural stria, a character otherwise peculiar to American *Paromali*. Marseul received this insect from Western Spain in 1864, and described it as *P. Schaufussi*, and said that the tubercular surface of the pygidium was wider and the tubercles smaller and closer together than those of *P. Luberti*. But Marseul only knew one sex, and possibly only saw one or two specimens. I have a larger series, and under the microscope I can see no differences in the American specimens; the punctuation above and below is similar, and also the sculpture of the mesosternal plate. Some years since I found the insect at Oran.

PAROMALUS TUBEROSUS, *sp. n.*

Ellipticus, convexus, niger, nitidus, supra punctulatus; maris propygidio in medio bituberculato, segmento ventrali primo posteriore obtuse sed conspicue acuminato; feminæ propygidio pygidioque lævibus. *Long.*, $4\frac{1}{4}$–$4\frac{3}{4}$ *mill.*

Elliptical, convex, black, shining; the head clearly, not densely, punctulate, lateral stria fine and abbreviated anteriorly; the thorax transverse, arched at the sides, marginal stria complete, with a semicircular depression before the scutellum (this depression is much wider than those of *P. mus* and *musculus*, Mars., which are not correctly speaking semicircular), punctulate, lateral punctures very fine; the elytra, subhumeral stria fine and complete, punctuation finest in the dorsal region; the propygidium, transverse and impunctate, ♂ with two conspicuous tubercles nearer the apex than the base and not far from each other; the pygidium, ♂ with deep and irregular vermicular sculpture, varying much in different specimens, sometimes only showing at the sides, sometimes covering the disc, ♀ smooth; the prosternum, bistriate, striæ joined anteriorly; the mesosternum, marginal stria interrupted behind the prosternal keel; the first segment of the abdomen in ♂ is conspicuously acuminate in the middle of the posterior edge; the tibiæ, anterior pair dilated with four or five apical teeth.

Hab.: Sumatra.

This curious species belongs to the same section of the genus as *P. victor*, *mus* and *musculus*, Mars.; species found under stones in the forests of Eastern Asia.

Southampton: *October 20th*, 1896.

ON *PLAGITHMYSUS*: A HAWAIIAN GENUS OF LONGICORN *COLEOPTERA*.

BY D. SHARP, M.A., F.R.S.

(*Concluded from page* 245).

PLAGITHMYSUS DARWINIANUS, *n. sp.*

Gracilis, rufo-flavus, antennis pedibusque rufis, femoribus basi flavescente; abdomine nigricante: thorace albido-vittato; elytris flavescentibus, singulo ad suturam linea angusta albida pubescente, anterius versus latus divergente, lineis his in media plagæ nigræ positis; basi dense punctato, lateribus nitidis lævigatis. *Long.*, 7—18 *mm.*

Extremely closely allied to *P. Blackburni* and *P. varians*, but apparently distinct, and readily distinguished by the clear red colour of the antennæ and legs, the latter of which are not marked with black: there is a subhumeral dark mark in this species and in *P. Blackburni* which is absent in *P. varians.* The flanks of the thorax are usually black; the yellow colour at the base of the femora is not so definite as in the other two species.

A very fine series of this species was obtained at Kilauea in August, 1895; it is attached to the "Mamane" tree; Mr. Perkins noted it as distinct from *C. varians.*

PLAGITHMYSUS BLACKBURNI.

Clytarlus Blackburni, Sharp, Trans. Dublin Soc. (2), III, 1885, p. 195.

Var. a, femoribus rufis, basi flavo, apice nigro. *Long.*, 12—17½ *mm.*

Mr. Perkins procured a series of about two dozen examples of this species on Mauna Loa in the Kona district in the autumn of 1892; they quite agree with the specimens found by Mr. Blackburn. There are only two specimens of the variety with red femora, and they are not connected with the type by intermediate forms.

PLAGITHMYSUS SULPHURESCENS, *n. sp.*

Niger, thorace albido-vittato, elytris ex parte majore nigris, basi lateribusque fulvo-testaceis, plaga magna cuneata, a sutura nigra anguste divisa, pubescentiæ sulphureæ; pectore rufo, sulphureo-vestita, femoribus rufis, basi flavo, apice nigro, tibiis tarsisque rufo-obscuris, vel nigricantibus, pube flavicante hirsutis. *Long.*, 13—16½ *mm.*

Allied to *P. varians*, but readily distinguished from it as well as from *P. Blackburni* and *P. Darwinianus* by the broad patch of sulphureous pubescence on the elytra. Antennæ black, with very little setosity: head black, with a great deal of white pubescence; thorax black, with two white stripes along the middle and a more indistinct one on each side. Elytra prettily variegate, the sulphureous mark surrounded with black, and in front of this with only a small rufescent area at the base, the sides are yellow but there is a large black subhumeral mark; the shining sides are closely punctate except on the pallid yellow part. The femora are broadly yellow at the base, and black at the tip. The abdomen is black and shining.

Kilauea, Hawaii, July, 1895. Eight specimens. On a tree with small inconspicuous blossoms turning into dense masses of yellow berries very easily detached; ? of the nettle family.

The specimens are not sufficient in number to allow me to form an opinion as to the amount of variation; the sulphureous tint of the setosity is in one individual replaced by a dull ochreous colour; in another the extent of black colour is reduced. I have no doubt the species is distinct. In the colour of the legs it agrees with var. *a* of *P. Blackburni*, but that insect has the antennæ red and more strongly setose.

PLAGITHMYSUS SPECULIFER, *n. sp.*

Flavo-rufus, capite thoraceque nigricantibus, hoc albido quadri-vittato; elytris ex parte majore nigris, basi rufo, margine laterali flavo, densissime punctatis, plaga communi elongata, gracile, anterius leniter furcata, ochracea; pedibus perelongatis rufis, femoribus basi flavo. *Long.*, 15 *mm.*

This species is also represented by a single example: it is rather closely allied to *P. sulphurescens*, but is readily distinguished by the remarkably large, highly polished, impunctate space on the sides of the thorax, as well as by the denser punctuation of the lateral portions of the elytra and the very gentle outward curvation of the pubescent area: this yellow area is entirely surrounded by the black colour, whereas in *P. sulphurescens* the fork of the pubescent area divides the black colour completely. The meso- and metasterna are pale red; the abdomen black, more or less marked with yellow; it extends, when the terminal segment is withdrawn, to within about 2½ or 3 mm. of the tip of the elytra.

Head of Jao Valley, Maui, June, 1894.

PLAGITHMYSUS ÆSTIVUS, *n. sp.*

Rufus, abdomine femoribusque facie inferiore nigricantibus; thorace albido bivittato; elytris basi setis albidis adsperso, sutura posterius lineis latis, minus argutis, singulo anterius versus latus divergente, pubescentiæ albidæ. *Long.*, 8—15 *mm.*

Thorax dark red; with two broad, white stripes on the dorsum, the sides bare, each with a large smooth space. Elytra densely punctured, without smooth space at the sides; the basal part flecked with white hairs, and there are also flecks of white hair along the suture behind, forming a diverging fork in front. Legs with the femora not greatly thickened, in the female indeed, almost slender; either red, or marked with black along their under surfaces. Tibiæ and tarsi with comparatively little hair.

Molokai. Mr. Perkins procured a pair of this species *in copûla* on the 3rd of August, 1893, and on revisiting the island in June, 1896, he secured seven other specimens, only one of which is a female. Judging from these two examples this sex is much smaller than the male, and has the abdomen thick at the base, as well as the thighs slender; these characters bring it near to the Kauai *P. arachnipes*, from which it is in appearance totally dissimilar.

PLAGITHMYSUS FUNEBRIS, *n. sp.*

Niger, dense punctatus, elytris ex parte, metasterno femoribusque basi flavis, antennis fuscis; elytris posterius linea angusta pubescentiæ albidæ paulo ante medium elytrorum longitudinis furcata, ibique externe plus minusve ampliata. *Long.*, 6½—13 *mm.*

Mas., femoribus posterioribus crassis. Fem., minor, femoribus subgracilibus.

This is the most black of all the species. The thorax has sometimes a little white tomentum on the dorsum, which occasionally is sufficient to form two indistinct broad stripes. The antennæ are slender, red, but very strongly tinged with black. The elytra are very densely punctured, their ground colour is yellow with large black markings, but these latter are sometimes so extensive that the yellow almost disappears; the sides behind are yellowish, just above the hind femora the yellow colour extends inwards to form an angular mark, a yellow mark round the scutellum is constantly present; the line of white pubescence is not dense but is quite distinct, and at the end of its fork in front is generally augumented in thickness by some white hairs on the angular yellow mark; sometimes there is a good deal of white pubescence on the base of the elytra. There is great difference between the sexes. the male having the femora very thick, the abdomen very small, and the hind coxæ prominent: whereas in the female the legs are unusually slender, the abdomen is large and placed almost on the same plane as the metasternum. The species is very distinct and the only one it at all resembles is *P. Finschi.*

Haleakala, May, 1886, a series of about forty specimens. The female represented, however, by only about half a dozen individuals.

PLAGITHMYSUS ÆQUALIS, *n. sp.*

Variegatus, nigro-rufus, capite, thorace, femoribus abdomineque nigris, femoribus basi flavo, thorace dorso albido-variegata antennis tibiis, tarsis pectore elytrisque rufis, his ante apicem nigricantibus, irregulariter albido-ornatis, spatio dorsali denudato, angulare. *Long.*, 9—12 *mm.*

Var. a, femoribus rufis, basi flavo.

Head with much white pubescence; thorax with the dorsum bearing a scanty white pubescence, which is more or less distinctly separated into two parts by the median prominence. Elytra with the base red, rough, variegate with small white spots; behind this with a bare angular mark, densely punctate, of a somewhat browner colour, and in this region with a little flavescent setosity, extending on the under-surface along the hind part of the metasternum: behind the middle the elytra have a large but variable and vague patch of darker colour and shining; along the suture there are placed white flecks, which end by diverging laterally when they reach the bare dorsal mark. Legs of the male very long, thick, thighs roughened by little asperities, quite dull. In the female the legs are a little shorter and the femora are not quite so swollen. This latter sex is readily distinguished by the much shorter terminal joints of the antennæ, and by the tips of the elytra being spread more horizontally.

Kauai, 3,000ft., autumn ? 1894; Koholuamane, April, 1895. We have received a series of nearly twenty examples, but only two of them are females. These two females differ greatly in size.

PLAGITHMYSUS ARACHNIPES, *n. sp.*

Gracilis, colore variabilis; elytris maculis irregularibus, plus minusve conjunctis, tomenti albidi, spatia triangulare in medio libera; pubescentia in medio corporis plus minusve flavescente; femoribus basi pallide flavis, pedibus elongatis. *Long.*, $4\frac{1}{2}$—14 *mm.*

Mas., femoribus crassisusculis. Fem., femoribus gracilibus.

There are two chief types of coloration of this variable species, one in which the thorax and femora (except the base) are black, and a second in which both are red. The elytra vary in colour from red to nearly black, and also in the extent of the flecks of white tomentum, which sometimes are so extensive and so much united as to cover the apical two-thirds nearly completely, the base is then marked with closely placed sinuous patches, and the angular mark on the dorsum is then very clear and definite. There is a little yellow tomentum, which is distributed on a belt round the middle of the body and is most distinct on the metasternum. The antennæ are red. The thorax has two white vittæ on the middle and another very indistinct one on each side; the two lines on the posterior tuberosity stand up very distinctly. The elytra are densely punctured, but in the male the sides behind are shining; the tibiæ are slender, the hinder tarsi are densely clothed with white hairs.

Mr. Perkins procured a series of sixteen specimens of this variable insect in Kauai in May, 1895. Although the sexual difference is so marked, and the female by its slender hind legs has much the appearance of a *Clytarlus*, yet the generic characters of *Plagithmysus* are maintained, except as regard the structure of the abdomen of the latter sex, which departs from its congeners in having the base of the abdomen placed on the same plane as the metasternum. The larger males are extremely similar to the smaller males of *P. æqualis*, but the two appear to be really distinct. The females vary extremely in size.

PLAGITHMYSUS CRISTATUS.

Clytarlus cristatus, Shp., Tr. Ent. Soc. London, 1878, p. 207.

Oahu. The material received of this species is inadequate to enable me to identify the sexes with certainty. Mr. Gahan thinks that the type of *Clytus attenuatus*, Boisd., will prove to be the female of this species.

Cambridge: *August*, 1896.

BOMBUS SMITHIANUS, WHITE.

BY EDWARD SAUNDERS, F.L.S.

There can be little doubt that the species which we know in Britain under this name is a form of that known on the Continent as *cognatus*. In this Magazine (2nd ser., vol. v, p. 198) and in my "Hymenoptera Aculeata," I expressed a doubt as to this synonymy, because the figures given by Schmiedeknecht and Hoffer of the armature of the male represented the lacinia as being much longer than it is in the specimens I have examined; during the current year, however, I have received from Prof. Friese of Innsbruck examples of *cognatus* (which species he considers to be identical with *muscorum*, Fab.), and the armatures of his males agree exactly with those of mine. No doubt, therefore, of their identity is probable, and it can only be presumed that the artists have exaggerated the length of the lacinia in the figures. *B. Smithianus* as it used to be known (*i. e.*, from Shetland specimens only) appeared to be a well defined species, the bright orange of the hairs of the upper parts of the thorax, the more shaggy, paler, more lemon-coloured hairs of the abdomen, and the black hairs of the whole of the under-side, giving it a most characteristic appearance.

The first specimens which came under my notice differing from the typical forms were a series taken by the Rev. F. D. Morice in Orkney (*cf.* Ent. Mo. Mag., 2nd ser., vol. v, p. 269), where curiously enough the typical form did not put in an appearance, and I regarded them as a curious variety probably peculiar to that island. This year, however, the Rev. W. F. Johnson has taken a number of examples in his own garden at Poyntzpass, Ireland (as recorded by him at p. 232), which are clearly referable to *Smithianus*, but which, with the exception of the characters presented by the armature, and the comparative length of the 3rd and 4th antennal joints in the ♂, present no structural difference whereby to distinguish them from *venustus*. The colour of the pubescence on the thorax above is brighter and the black hairs on the tibiæ are perhaps more numerous, but otherwise the two species seem to be undistinguishable. I have a ♂ exactly like the Irish ones taken by myself on the chalk downs at Seaford in August this year, and bottled on account of its unusually bright colouring for a *venustus* as I then presumed it to be; I extracted its armature and put it away, and it was not until I received Mr. Johnson's specimens that I re-examined it, and found it also to be *Smithianus*. I have little doubt that the species is far more widely distributed than at present imagined, and if collectors will secure all the very brightly coloured ♂ examples they meet with, I suspect many will prove to belong to the species we have hitherto regarded as a rarity. The unsatisfactory part of it all is that the ♀ and ☿ at present cannot be identified for certain unless a ♂ from the same nest can be secured. On the Continent the shorter, more even pubescence of "*cognatus*" is regarded as a distinguishing character between it and *venustus* (*variabilis*, Schm.), but in the specimens from this country I cannot see any character of this sort to rely upon, although it is clearly noticeable in my Continental examples, the pubescence of "*cognatus*" comparing with that of "*variabilis*" somewhat as that of *Latreillellus* compares with that of *hortorum*, the difference being, however, less marked.

It would really seem that in many cases the form of the ♂ armature is the only reliable character in *Bombus*, and there is probably no genus that preaches so clearly against trusting to colour in the determination of species. The variability of nearly all the species (*i. e.*, if we take the ♂ armature as our determining guide) is extreme, and many species which in this country seem pretty constant in coloration, are found to vary extensively when the more southern forms are considered. In Britain *terrestris* and its var. *lucorum* keep constant in the style of banding, although the colour of the paler bands and of the apex of the abdomen varies, but follow it to Corsica, and its ♀ and ☿ appear in black and red livery, almost like that of *lapidarius*, and with bright clear testaceous-red tibiæ, the ♂ being sometimes entirely pale yellowish but with generally a slightly darker transverse band on the thorax. Or take *lapidarius* ♀, which in this country is black with a bright red tail, and only very rarely has a narrow yellowish band on the pronotum; in Italy you will find it with broad yellow bands across the thorax anteriorly and posteriorly, and the base of the abdomen bright yellow; *hortorum* also in the south runs into a variety with an entirely black abdomen ("*ligusticus*"), and also into one with a red apex to the body ("*corsicus*"), and around *pratorum* there is a group of even now so-called species, *pratorum*, *Jonellus*, *lapponicus*, *alticola*, *pyrenœus*, in all of which the ♂ armature is practically identical, which, to my mind, are as clearly referable to one as the varieties quoted above.

I believe that these races (as they may more properly perhaps be called) keep distinct, so that one would not find a *pratorum* and *Jonellus*, for instance, in the same nest, and so perhaps it is well to keep them under distinguishing names, just as one keeps the various races of *Myrmica*, but that they all really form one variable species I cannot personally feel any doubt. So far as we know, our three allied species, of which *Smithianus* is one, never assume a banded livery, although *venustus* (*variabilis*, Schm.) has sometimes the apex of the abdomen whitish, while the rest of it may be nearly black. It is an interesting question whether the dark forms may be considered typical, and the banded and pale ones varieties, or *vice versa*.

Any one who has access to *Bombus* nests could do useful service to science in collecting the extreme varieties from each, as it would be interesting to know to what extent the races of the various species keep distinct.

St. Ann's, Woking: *October 3rd*, 1896.

TRICHOPTERA COLLECTED BY DR. CHAPMAN AT THE VARANGER FIORD.

BY ROBERT McLACHLAN, F.R.S., &c.

Our friend Dr. Chapman was among the somewhat numerous tourists who went to the Varanger Fiord (Finmark) this year on what proved to be an abortive eclipse expedition. Before his departure I requested him to collect any *Trichoptera*, &c., he might meet with. I have received the results, through Mr. Tutt, consisting of about twenty-five specimens of *Trichoptera*, and three or four *Ephemeridæ* (which latter are at present not worked out). The *Trichoptera* are as follows:—

Limnophilus femoratus, Zett. Thirteen examples, or more than half the total, of small size, and of the form that resembles the typical condition of *L. fuscinervis*, Zett., very closely, though differing vastly in structure. My suggestion (Revision and Synopsis, p. 73) that it is only in the ♂ that the femora are dark appears to be quite justified by these individuals.

Limnophilus griseus, L. (et auct.). One small ♀.

Asynarchus. Two ♀ apparently belong here, and as two species, but their determination remains doubtful in the absence of the ♂.

Micropterna sequax, McL. One ♂.

Halesus tessellatus, Ramb. One ♂.

Apatania stigmatella, Zett. One ♀, slightly doubtful.

Molanna palpata, McL. One ♀.

Hydropsyche nevæ, Kol., var. *feunica*, McL. One ♂.

Plectrocnemia conspersa, Curt. Two ♀.

Rhyacophila nubila, Zett. Two ♂.

Of the above-named ten or eleven species, *L. griseus*, *M. sequax*, *M. palpata*, and *P. conspersa*, occur in Britain.

The specimens were all collected between August 4th and 9th, at Elvenaes and Vadsö, which lie on the south and north sides of the Fiord respectively, but I am unable to state the exact locality of each individual, a matter not of much importance.

Lewisham, London: *October 24th*, 1896.

Ravages of Termites ("White Ants") at Sydney, N.S.W.—In the very full interesting and suggestive Annual Report of the Trustees of the Australian Museum for the year 1895 (the forty-second), we find the following allusions to this subject:—At page 1, Dr. James C. Cox (the Chairman) says, "An accident to the plaster revealed the astounding fact that the entire roof over the central part of the main building had been destroyed by white ants. The destruction was so complete that it is surprising that the portion affected did not collapse. It has been temporarily supported under the direction of the Government Architect." At page 3, Mr. R. Etheridge, Jr. (Curator), says, "I have already referred to the presence of "White Ant" in the high roof facing College Street. On survey it was found that an entirely new roof was required, but to render the present one temporarily safe to life and property, shoring up was energetically taken in hand by the Government Architect, pending the placing of a sum of money on the estimates to provide a new roof." No attempt seems to have been made to identify the particular "White Ant" that caused the mischief.—R. McLachlan, Lewisham, London: *26th October*, 1896.

Stenophylax rotundipennis in East Yorkshire.—I took a male specimen of *Stenophylax rotundipennis* at Castle Howard on September 8th last, among an abundance of *Halesus radiatus.* Last June, at the same place, I took *Limnophilus fuscicornis*, *Leptocerus nigro-nervosus* and *Osmylus chrysops* all commonly, and many other species.—Geo. T. Porritt, Crosland Hall, Huddersfield: *November* 11*th*, 1896.

Blabera gigantea at Bradford.—Mr. J. W. Carter, of Bradford, has informed me that a large cockroach was taken some time ago at timber works at that town. After comparison with specimens in the collection of Mr. Mosley, of Huddersfield, he considers it to be *Blabera gigantea*, Linn. It had probably been imported from tropical America with foreign timber, as no more have been taken and it does not seem to be established there. *Periplaneta americana*, L., which used to be so common at Bradford, seems now to have disappeared, while *P. orientalis*, L., and *Phyllodromia germanica* are numerous.—Malcolm Burr, Bellagio, East Grinstead: *November* 3*rd*, 1896.

Local Notes on British Orthoptera.—*Ectobia Panzeri*, Steph.—On August 8th last, near Christchurch in Hampshire, I came across considerable numbers of *Ectobia Panzeri*; they were discovered hiding under dead seaweed and other rubbish but a few yards from high-water mark. Of the sexes perhaps the female was rather the commoner, and many specimens were dark, especially in the legs.

Nemobius sylvestris, Fabr., and *Thamnotrizon cinereus*, L.—In the New Forest at the beginning of August last *N. sylvestris* was in great abundance near Brockenhurst, and I came across a couple of specimens of *T. cinereus* in the same locality.

Periplaneta australasiæ, Fabr.—During the last few weeks I have received considerable numbers of this cockroach from Kew Gardens, and from some gardens at Bishop's Waltham in Hants, in both of which localities it is well established; the specimens were in all stages of development. The females, which are larger than the males, have the yellow margin to the pronotum more pronounced than is that of their mates.

Periplaneta americana, L.—On November 7th I received a fine specimen of this insect from the Royal Horticultural Society's Gardens at Chiswick.—W. J. Lucas, 21, Knight's Park, Kingston-on-Thames: *November* 9*th*, 1896.

Aspidiotus hederæ, Vallot, new to Britain.—Through the kindness of Mr. McLachlan I have recently received from Teddington, near London, a quantity of holly leaves infested with the Coccid named above, which is an addition to our fauna, and interesting as having been lost sight of for a number of years. Signoret's description (Essai, p. 96), is most imperfect, and, so far as it goes, only applies to the immature ♀. In the adult ♀ there are four groups of compound spinnerets, and the scale has a dark central area with a broad greyish margin.—R. Newstead, Chester: *November* 18*th*, 1896.

Syrphus guttatus as British.—I am very much obliged to Mr. R. C. Bradley for calling my attention to his earlier captures of this insect in 1895. This insect may prove to be not so scarce after all, as owing to its small size, and close resemblance when on the wing to some of the commonest species, it may be easily overlooked by collectors. In the March number of this volume Mr. Bradley calls attention to the abundance of *Syrphi* in the Midlands in 1895, and I can certainly confirm this as regards the New Forest district throughout the season, but especially during May and June. *Euphorbia amygdaloides* formed a luxuriant undergrowth in the enclosures, and they swarmed about its flowers, *Syrphus tricinctus* being quite common. This year, however, owing to the drought, this plant scarcely made any growth, and I did not see a single *S. tricinctus*, whilst even the commonest species were scarce.—Fredk. C. Adams, 68, St. Ermin's Mansions, Westminster: *November*, 1896.

The larval habits of Baccha.—Mr. Bradley will find a notice by me on the metamorphoses of *Baccha* (*vide ante*, p. 256) in the "Stettiner Entomologische Zeitung, 1862, p. 412. I am not aware of any later publication.—C. R. Osten Sacken, Heidelberg: *November* 1*st*, 1896.

[The notice referred to by our correspondent concerns Schiner's assertion that the larva of *Baccha* was unknown. In it he says that in 1848 Guérin (Revue Zoolog., 1848, p. 350) described a *B. cochenillivora* from Guatemala, the larva of which feeds on cochineal and is destructive thereto. In 1854 Snellen van Vollenhoven, Handel. d. Nederl. Entom. Verein, says that *B. tabida* (only a var. of *B. elongata*) has larval habits like those of *Syrphus*. Lastly, Glover informs him that a species of *Baccha*, from the Southern United States, feeds on a *Coccus* that is a pest on orange trees.—Eds.].

Hibernation of Vanessa cardui in England.—As some doubts have recently been expressed as to whether *Vanessa cardui* ever hibernates in this country, I may mention that three or four years ago, on the Sunday preceding Christmas-day, I was walking along the Valley Road, Streatham, on the east side of which is a fence formed of the usual overlapping oak palings. Having—as an entomologist should—my eyes on the fence, my attention was attracted by what appeared to be the end of an oak leaf just protruding from where one pale overlapped another, and on closer inspection discovered that it was actually the under-side of just the tip of the fore-wing of a specimen of *Vanessa cardui.* I carefully took hold of the tip and gently drew the specimen from its hiding place, and found that it was a female, alive, but very sluggish. She, however, considerably revived after being brought indoors, but only to die a few days later. Unfortunately, I cannot more accurately state the exact date, though this hardly appears necessary. Had I not been fully under the impression that *V. cardui* was known to hibernate here, I should have noted the circumstance at the time. The weather, I distinctly remember, was very cold: frost and fog were both present on the day in question. The fence is an old one, and has, in places, bulged somewhat, which would furnish plenty of room for an insect like this to creep under.—JOSEPH H. CARPENTER, Shirley, St. James' Road, Sutton, Surrey: *November 3rd*, 1896.

Tephrosia biundularia double brooded in both races.—I see that my previous notice mentions July as the month in which the second brood of *T. crepuscularia* (brown spring form) emerged. This was an error, for they all came out between June 4th and 10th. I am anxiously hoping that there are still more to come, and that the spring brood may yet appear.—E. C. BAZETT, Springfield, Reading: *November*, 1896.

Mixodia palustrana, Z., in Ireland.—Mr. G. V. Hart, of Dublin, has just sent for examination three specimens of a very pretty little Tortrix taken by him in the mountain district of Wicklow, at Whitsuntide, 1895. They are undoubtedly *M. palustrana*, and of an exceptional richness of colouring, the ground colour being of the richest shining chocolate-red and the markings brilliant silvery-white. So far as I know this is the first notice of its occurrence in Ireland.—CHAS. G. BARRETT, 39, Linden Grove, Nunhead: *November*, 1896.

Tinea vinculella, H.-S.—In his note under the above heading (*ante*, p. 214) Mr. Francis Jenkinson says that the *Tinea* allied to *argentimaculella*, Stn., taken by him at Scilly about the beginning of August, 1877, and referred to by Mr. Stainton in Ent. Mo. Mag., xv, 88, "will almost certainly prove to be *vinculella*," and as he mentions that he gave Mr. Stainton the best of the specimens, I yesterday searched the Stainton collection for them, and found in the British series of *argentimaculella* two moths labelled "7 or 8, 1877. House, Scilly, Jenkinson. 30.6.78." The colour of the head, and the markings of the fore-wings, showed at once that Mr. Jenkinson's surmise was incorrect, for the specimens were referable neither to *vinculella* nor to any other of the known allies of *argentimaculella.* They resemble the latter species much more closely than anything else, agreeing with it exactly in colour and in the number and position of all the principal markings, and I have little doubt that they represent unusual forms of it; I say "forms," because the specimens are by no means exactly alike. In the first the three minute white dots round the apex are wanting, whilst in the second the two lower of these dots are present, and all the white markings are very much broader and more conspicuous. A peculiarity common to both is that the apical fringes start from a whitish base. In Ent. Mo. Mag., xv, 88, Stainton says that the fasciæ are "less defined and less silvery" than in *argentimaculella*, but I fail to see this distinction, unless these captured and slightly rubbed specimens are compared with bred ones: he also asserts that the apical markings are "*two only*, viz., a costal drop and a spot beneath it," but it has been already shown that the white markings round the apex differ in the two examples, and any series of *argentimaculella* will prove how greatly individuals vary in this respect. Another character emphasized by Stainton as distinguishing the Scilly insect from *argentimaculella* is that in the cilia "*the tips are distinctly whitish*," but he somehow overlooked the fact, although previously mentioned in his description in I. B. Lep. Tin., p. 36, that such is also the case with *argentimaculella* —EUSTACE R. BANKES, The Rectory, Corfe Castle: *October* 31*st*, 1896.

Oxytelus Fairmairei and Compsochilus palpalis in Bucks.—Both these rare *Brachelytra* have been taken by myself near Chesham during the past season. Of the former I have two specimens; one taken in dung in April, and the other from siftings of dead leaves collected in a beech wood in October. The *Compsochilus*, apparently, came out of some decaying leaves shaken over paper; but it is just possible it may have flown on to the paper, the afternoon when I found it being sultry in the month of August. At all events, after being bottled it was very restless, making continual efforts to escape by flying.—E. GEO. ELLIMAN, Chesham, Bucks: *November* 11*th*, 1896.

Habits of Homalium gracilicorne and H. brevicorne.—Having taken at different times six or seven examples of each of these very rare species, my experience, though so limited, may be useful to other Coleopterists, from the fact that, the examples having been taken under similar conditions, the habits of these species may be inferred with some certainty. Each specimen was taken singly from decaying and lichen covered branches of oak recently blown down. Search among the lichen on trunks or sound branches within reach proved fruitless, nor was any specimen obtained from branches which had lain for more than two or three days on the ground. I have only met with success during the two or three days succeeding a great gale. As the insects reside in the lichen and not as *Homalium vile* usually does, beneath the decaying bark, and are readily shaken out, it is probable that the greater number, or, in many cases, all, are dislodged by the fall of the branch, and that an examination of suitable branches on the trees would result in much more abundant captures. Such an investigation, however, is not one that I would willingly undertake or recommend to friends.—A. PIFFARD, Felden, Boxmoor, Herts: *October*, 1896.

Harpalus obscurus, F., in Dorsetshire.—During my stay at Weymouth this summer I was fortunate enough, on September 2nd, whilst turning over stones in search of beetles near the Chesil Beach, to come across a specimen of *Harpalus obscurus, F.* A second visit to the same spot produced another specimen. I have no doubt, had the weather been more favourable, I could have obtained more, but on account of the drought insects were very scarce. This is quite a new locality for this rare insect, nearly all the existing specimens coming from Cambridgeshire.—HORACE DONISTHORPE, 73, West Cromwell Road, S.W.: *October* 23*rd*, 1896.

Review.

A CHECK-LIST OF THE COCCIDÆ: by T. D. A. COCKERELL. [Extract from the Bulletin of the Illinois State Laboratory of Natural History, Urbana, Illinois. Vol. iv (1896)].

This enumeration of the known Coccids of all countries (773 species—names are given), the first that has been published, will be very welcome to all students, as the result of a laborious investigation of authors' works. "A list of 124 persons who have named genera, species or varieties of Coccids is appended, with the dates on or between which their writings pertinent in this connection were published." Says the author :—

"Specific names may be placed in three categories according to the manner of publication :—

"(1) *Nomina nuda.* Names published wholly without description. These are entirely ignored in the present list.

"(2) *Nomina seminuda.* Names published with descriptive matter insufficient for the determination of the species. Noted separately.

"(3) *Nomina valida.* Names published with descriptions sufficient for the recognition of the species."

So far good. Yet, the author continues, "Many names proposed by Green, W. G. Johnson, Olliff, and the present writer have been included, *though unpublished* at the time of writing; but in every case the description is understood to have been prepared, and to be awaiting very early publication." This invalidates the rule No. 1; a name only, published or not, is of no scientific value whatever, as it cannot be quoted or referred to. Otherwise this work is worthy of much praise.

Societies.

CAMBRIDGE ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY.—*Oct. 16th*, 1896.—the President, DR. SHARP, in the Chair.

Mr. Jones exhibited specimens of the Large Blue (*Lycæna Arion*). Mr. Rickard had the nest of a tree-wasp and other locally interesting exhibits. The President showed an unknown larva which is at present doing much damage to vegetation in Northamptonshire; a pupa of *Sphinx convolvuli*, prepared to show the way in which the proboscis is folded in its case; also one of the colonies of "white ants" (*Colotermes domesticus*) exhibited a year ago, now "in extremis." He said that one of the individuals had been transformed into an egg-producer, and specimens of the other Termites were seen in the spring carrying the eggs; the small colony had, in fact, established a "substitution queen" after the fashion described by Grassi. The next Meeting of the Society will be held on Oct. 30th and fortnightly from that date.—C. J. WILKINSON, *Hon. Secretary*.

Oct. 30th, 1896.—The President in the Chair.

Mr. Rickard exhibited a number of South African insects, including various *Orthoptera* of the genus *Phymateus* and allied genera, and *Hymenoptera*, and a specimen of *Batrachotettix*, a very variable insect, whose colour is said to depend upon the nature of ground in its neighbourhood. Dr. Sharp showed various stages of *Thysidopteryx ephemeriformis* from Washington, U.S.A., including some perfect insects which had emerged after their arrival in England. The President read a paper upon "Jumping Cocoons" (published simultaneously in the "Entomologist" for November). He described the structure of the pupa and the mechanism by which it chisles and hammers its way out of the cocoon. He suggested that the "jumping" was produced by the efforts of the insect to free itself when the cocoon had by accident become detached from its moorings. Mr. Lamb remarked that the mechanics of the process were rather obscure.—C. J. WILKINSON, *Hon. Sec.*

LANCASHIRE AND CHESHIRE ENTOMOLOGICAL SOCIETY: *November 9th*, 1896. —S. J. CAPPER, Esq., F.L.S., F.E.S., President, in the Chair.

Owing to the Secretary, Mr. H. B. Jones, going abroad, Mr. F. N. Pierce undertook the duties until the end of the year.

Mr. F. N. Pierce read a paper, entitled, "Are Hybrids Hermaphroditic? Some Recent Investigations in the Genitalia," which was illustrated by specimens, diagrams and the micro-lantern; the author stated in the specimens he had examined that whereas the male hybrids, although distinct from the parents, were perfectly formed and apparently capable of pairing, the female was hermaphroditic, the genitalia containing the organs of both sexes. Dr. Ellis stated that in Nature it was easier to produce males than females, and suggested that if the organs of females were more generally examined, it would probably be found that instances of the male organs being also present would not be rare. Mr. C. S. Gregson exhibited five varieties of *Abraxas grossulariata*, and a specimen of *Aplecta occulta* bred by him that morning.—F. N. PIERCE, *Hon. Sec. (pro tem.)*, 1, The Elms, Dingle, Liverpool.

LEICESTER LITERARY AND PHILOSOPHICAL SOCIETY. ENTOMOLOGICAL SECTION.—*October 28th*, 1896.—MR. W. A. VICE, M.B., in the Chair.

Mr. F. Bouskell, F.E.S., read a paper on "The Disappearance of certain species of Insects, with Notes on their Slaughter and Protection." After stating what was being done by the Entomological Society of London, the author mentioned that some good people appeared to doubt that over-collecting had assisted, or was assisting, in the extermination of any of our species, but that it must be put down to bad seasons or other causes, and not to the agency of man. To show the fallacy of this view the author dealt fully with the following species of *Lepidoptera*, giving numerous examples of over-collecting and reviewing the various theories as to their extinction or scarcity, viz.:—*Chrysophanus dispar*, *Aporia cratægi*, *Lycæna Arion*, *Thecla pruni*, *Leucophasia sinapis*, *Melitæa Athalia*, *M. Cinxia*, *Apatura Iris*, *Lycæna Acis*, *Papilio Machaon* and others, then dealt with some ten species of *Coleoptera* which had undoubtedly been over-collected. Mr. Bouskell, in dealing with the question of remedies, stated that they were either compulsory or voluntary. Compulsory, such as by legislation, was impracticable, therefore they must rely on the efforts of entomologists themselves. One point was to educate the mere collector who collects for the sake of killing and accumulation, and to encourage the study of life histories by means of rearing from the egg. On the question of protection the author suggested the approaching the land-owners to grant conditional passes, subject to regulations suggested by the section being adhered to, on the fishing ticket style. For the prevention of over-collecting locally, he suggested the drawing up of regulations by a committee. With regard to rare species on public ground, the only remedy was for all Societies to combine and insist on stopping it, at least as far as their own Members, any Member infringing should be called upon to resign. Finally, he summed up the remedies as follows:—(1) Educating the collector; (2) Protecting local species by local Societies getting land owners to refuse passes; (3) Closing the ground altogether for all collecting, as in the case of *Arion* and a few others; (4) For all Societies to combine to stop over-collecting. In conclusion, he urged the importance of all endeavouring to stop any over-collecting they might come across, and trying to instil into the younger Members, that there was a higher end than the mere amassing of specimens, and to discourage long series of rarities. The Chairman said he had no doubt all present were in sympathy with the objects of the paper, and as it was of such importance, he hoped it would be fully discussed. Mr. W. J. Kaye, F.E.S., agreed that every possible step ought to be taken. Stopping the passes should have a good effect. He thought all entomologists should discountenance over-collecting in every form, and agreed with Mr. Bouskell most cordially. Mr. G. B. Dixon endorsed the author's opinion as to selling; he thought that as long as things were for sale there would be buyers. He could not believe in bad seasons being to blame; could we blame the seasons in the case of the Bison or the Elephant? In the case of *C. dispar* he happened to know Yaxley Fen, and could safely say it had not altered substantially in the last 100 years. He quite agreed as to the remedies. One other point he would urge was, not taking insects unless in good condition. All Societies should act as protectors in their own districts, and, if necessary, publish a black list. The formation of Societies over the whole country should be encouraged, and all collectors should join such Societies. Rev. C. T. Cruttwell, M.A., was of opinion that legislation at present was out of the question, though one day we shall awake to mourn the loss of all our most beautiful insects, and perhaps public opinion would then be stirred, but then it would be too late. He knew of no better deterrent than true culture. Mr. H. St. J. Donisthorpe, F.Z.S., F.E.S., said in the way of a remedy it was most difficult to suggest anything practical. If all took the matter up and by their attitude endeavoured to shame the avaricious collector (which would be difficult), and in the case of known over-collectors, to refuse to exchange, buy, or accept from such would spoil their market and tend to lessen the evil. Mr. E. S. Pink agreed that something should be done quickly. The Societies should discourage the purchase of British rarities. With a view to stopping the evil, some provision to that end might be made a condition of membership. Mr. W. H. Scott thought the stopping of passes the most effectual remedy suggested. Mr. C. B. Headley, F.E.S., fully agreed with the paper. He thought that by appointing a Committee and protecting our local species, we should be putting a strong spoke in the wheel against over-collecting. He remembered seeing 300 pupæ of *Papilio Machaon* last year, at Wicken, which had been collected by one woman, which showed the need for local protection. Mr. T. B. Pateman agreed with the author and could not understand any one seriously putting forward the weather and other reasons for extermination. Was the wolf exterminated here by bad seasons? Where would the fox be now but for protection? Could the Red Indian and the Australian Aborigines be said to have vanished through bad seasons? He maintained man, white man, was responsible just as the over-collector was in this case. He most strongly condemned the taking of more specimens than were set. He thought selling would always go on, if stopped here there would be a certain demand on the Continent. Mr. F. R. Rowley said the author's indictment was certainly not overdrawn; he thought co-operation was necessary for much to be done. The remedies were good in themselves if generally taken up by all Societies. Mr. T. Carter, LL.B., agreed with the movement and said unfortunately plants had been equally sinned against and even many local species wanted protection. He thought land-owners should be made aware of the fact if any rarities occurred on their ground, and then, doubtless, they would assist in their preservation. Mr. Pearson suggested that if influence could be brought to bear to induce land-owners to only grant passes through a Society or on their recommendation, the evil would be met. Mr. J. Stanyon agreed with the remedies, and suggested that after due warning a black list should be published in the Entomologist's Monthly Magazine, The Record and other Journals. The Chairman said after such an interesting discussion it was difficult to add anything fresh. He once did not believe in over-collecting, but after to-night he had no doubt. Possibly, through working the *Diptera*, he ought to have thought of the wholesale slaughter carried on by man even amongst flies. He thought that some of the London and other Societies had, perhaps, unwittingly, rather encouraged it by publishing such items as "Mr. W. S. exhibited a large series of *L. Arion*," or "Mr. B. P., a drawer of *A. Iris*, all bred." Unless all Societies helped, we could not do much except locally. A vote of thanks was proposed by the Chairman, seconded by Mr. G. B. Chalcraft, and carried by acclamation. Mr. Bouskell, in reply, said he was glad of one thing, that they all appeared of one opinion as to over-collecting and that it should be stopped; there might be slight divergencies as to details in the proposed remedies, but the principle was agreed. He felt sure a Committee would be fully supported in any regulations they might make. In thanking them for the vote of thanks he could only say if indirectly his paper was the means of saving a single species, he should be amply repaid. Mr. F. B. Pateman proposed, Mr. F. B. Jones, M.R.C.V.S., seconded, and it was resolved that a Committee, consisting of Messrs. Vice, Dixon, Bouskell, Headley and Kaye be appointed to draw up regulations.—F. BOUSKELL, *Hon. Secretary.*

THE SOUTH LONDON ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY: *October* 22*nd*, 1896.—C. G. BARRETT, Esq., F.E.S., Vice-President, in the Chair.

Mr. A. T. Potter, of Whangarei, Auckland, New Zealand, was elected a Member.

Mr. R. Adkin exhibited a series of *Hadena adusta*, from Shetland, very beautifully marked. Mr. Ficklin, bred specimens of *Luperina cespitis*, from larvæ taken on grass stems in the spring. He suggested that their small size was due to their proper food being grass roots and not the green blades. A large number of specimens of *Tephrosia crepuscularia* and *T. biundularia* were shown by Messrs. Tutt, Henderson, Barrett, Auld, Mera, Mansbridge, de V. Kane, Tunaley, H. Williams and Chittenden, forming such a collection of forms as, in the opinion of all present, had never before been brought together. In reply to Mr. Barrett's re-assertion, based on Mrs. Bazett's captures, that these two were one species, Mr. Tutt read a very exhaustive paper. He assumed that the earlier species should be termed *T. bistortata* and the later one *T. crepuscularia*, as Mr. Prout asserted, and said that the difference of opinion among entomologists was largely a matter of the definition of a "species." They each had distinct life-cycles, distinct facies and one had seasonal dimorphism, besides which each bred true to its own race. He showed that errors had arisen from statements made on insufficient data and from too much reliance being placed on various writings, such as those made in Newman's "Moths." He reviewed the discussion which took place some ten years ago in the magazines, and said that the consensus of opinion then was the same as his own. The opinions of the chief opponents were then discussed in detail, especially various contributions of Mr. Barrett to the discussion. He showed by quotations that Mr. Barrett had accepted the idea of species until he recently received certain specimens and data from Mrs. Bazett, including some supposed second brood *T. biundularia*. After stating that these were undoubtedly *T. crepuscularia*, second brood, he referred to the evidence offered as to distinctness by Messrs. Porritt, Fenn and Tugwell, who had bred both species and pointed out the differences which separated the two. He showed that parallelism was not a sign of unity of species, nor was it right to compare dates of years like 1888 with 1898. He discussed the Scotch forms and remarked that they more nearly resembled the German specimens. Mr. Henderson said that he had taken *T. crepuscularia* in the very woods where it was stated by Mrs. Bazett not to occur. His experience and remarks agreed wholly with Mr. Tutt's, and he mentioned that the late J. A. Cooper had reared a second brood of *T. biundularia*. The remarks made by the other exhibitors all tended to support the case as put forth in Mr. Tutt's paper. Mr. de Vismes Kane sent an account of the occurrence of the only species of *T. biundularia* occurring in Ireland, together with a typical exhibit. In reply to the vote of thanks proposed by Mr. Barrett and seconded by Mr. Auld, Mr. Tutt said that the idea of species was simply a matter of utility, and as there were two distinct life-cycles, it was more convenient to consider them as two species, although they might be very closely allied. Mr. Montgomery stated that there was considerable doubt about his record on Sept. 24th, that *N. ditrapezium* occurred in Yorkshire. — HY. J. TURNER, *Hon. Secretary.*

ENTOMOLOGICAL SOCIETY OF LONDON: *October* 21*st*, 1896. — Professor RAPHAEL MELDOLA, F.R.S., President, in the Chair.

Mr. J. J. Walker, R.N., exhibited a specimen of *Emus hirtus*, L., taken at Gore Court Park, Sittingbourne, Kent, on the 30th May last. Mr. W. B. Spence sent, from Florence, for exhibition, some specimens of a cricket, *Gryllus campestris*, in small wire cages, which he stated were, in accordance with an ancient custom, sold by the Italians on Ascension-day. Mr. F. Enock, a specimen of the curious aquatic Hymenopteron *Prestwichia aquatica*, ♀, which Sir John Lubbock first captured in 1862, but which had not been recorded since that date until its re-discovery in May, 1896. Mr. Enock said the male had remained unknown until June last, when he captured several swimming about in a pond at Epping. The male was micropterous, and, like the female, used its legs for propelling itself through the water. Mr. Tutt, a beautiful aberration of *Tephrosia bistortata* (*crepuscularia*), in which the ochreous ground-colour was much intensified, and the transverse shade between the median and subterminal line was developed into a brown band; the transverse basal, median and subterminal lines on the fore-wings, and the median and subterminal lines on the hind-wings, being strongly marked in dark brown. It was taken by Mr. J. Mason at Clevedon in March, 1893. Mr. Tutt also exhibited the cocoons, pupa-skin, and aberrations of the imago of *Zygæna exulans*. The cocoons were spun upon one another, five in a cluster, and Mr. Tutt stated that the species was exceedingly abundant in the pupal and imaginal stages during the first week of August on the mountain slopes above Le Lautaret, in the Dauphiné Alps, at from 7,000 to 9,000 feet elevation. The pupa-skin was very similar to those of other Zygænids. The imagines exhibited were all aberrations, and consisted of females of the ab. *flavilinea*, with bright yellow nervures; a large male and several females of the ab. *striata*, with the red spots more or less confluent and developed into streaks; also, an unique female aberration in which the wing, from the base to far beyond the centre was entirely crimson. Dr. Sharp, a specimen of a Lepidopterous insect that had been alluded to in "The Entomologist's Monthly Magazine," Sept., 1896, p. 201. It was a caterpillar which had received the eggs of a parasite on the anterior part of the body, the abdomen, nevertheless, went on to the pupal metamorphosis, while the head and thorax remained attached to it in the caterpillar stage. He also called attention to some peculiarities in the pupa of *Plusia moneta*, pointed out to him by Mr. Fleet; in this species the pigmentation varies greatly in extent, and is sometimes entirely absent. Mr. Blandford called attention to the recent discoveries relating to the Tsetse fly, made by Surgeon-Major Bruce in Zululand, which proved that this insect affected animals by infecting them with a parasitic Protozoon. The parasite was communicated from wild animals to domestic animals, and was probably more widely distributed than was generally believed, it or a closely allied form having been found in India and England in sewer rats. He said that Surgeon-Major Bruce had proved that the Tsetse fly was pupiparous, which was of importance as affecting the classification of the *Diptera*. Dr. Sharp said that in his opinion the Tsetse fly would cease to be troublesome with the advance of civilization. Mr. C. G. Barrett exhibited the pupa-skin, cocoon and eggs of *Hesperia comma*, L., found on chalk hills near Reading by Mr. A. H. Hamm. He also exhibited and remarked on a series of both forms of *Tephrosia crepuscularia* and *T. biundularia*, showing an unbroken line of variation from brown to white and also to grey and black. In addition, he showed several second-brood specimens of both forms obtained in the past summer by Mrs. Bazett of Reading. Mr. Tutt and Mr. Fenn made some remarks on the specimens exhibited. Mr. Tutt read a paper, entitled, "On the specific identity of *Cænonympha Iphis* and *C. Satyrion*," and exhibited a long series of specimens. The Rev. T. A. Marshall communicated a paper, entitled, "A Monograph of British *Braconidæ*. Part VII." Mr. T. D. A. Cockerell communicated a paper, entitled, "New *Hymenoptera* from the Mesilla Valley, New Mexico." Mr. E. Meyrick contributed a paper, entitled, "On *Lepidoptera* from the Malay Archipelago." Dr. Sharp read a paper by Mr. G. D. Haviland and himself, entitled, "Termites in Captivity in England."—H. Goss and W. W. Fowler, *Hon. Secretaries.*

November 4th, 1896.—The President in the Chair.

Mr. McLachlan exhibited a collection of the cast nymph-skins of more than one-third of the species of European Dragon-flies from the Département de l'Indre, France, sent to him by Mons. René Martin. Two or three of the species had been reared in an aquarium, but the identification of most of them has been secured by finding the imago drying its wings in the immediate vicinity of the cast skin. Mr. R. Adkin, a long series of *Acidalia marginepunctata* taken on the sea-coast at Eastbourne, Sussex, during the past eight summers. The series included examples of a bone-coloured form with slightly indicated transverse markings; others much dusted with black scales, giving them a deep grey tone, with well developed markings; and sundry forms intermediate between the two; also three taken this year, in which the whole of the wings, with the exception of a pale submarginal line, are densely covered with black scales, giving them a similar appearance to the so-called "black" forms that are found among some of the species of *Boarmia* and *Tephrosia*. Mr. Horace St. John Donisthorpe, a female specimen of *Dytiscus circumcinctus*, Ahr., with elytra resembling in form those of the male. He said the specimen had been taken in Wicken Fen in August last. Mr. Tutt, a specimen of *Mellinia ocellaris*, recently taken near Southend, together with a specimen of *M. gilvago* for comparison; also four specimens of *Argyresthia Atmoriella*, taken by Mr. Atmore last June at Lynn, Norfolk. He also exhibited a pupa-case of *Thymelicus lineola* from the Essex salt marshes. He drew attention to the structural characters exhibited by it, and pointed out that it differed markedly from the pupa of *Pamphila comma* exhibited at the last Meeting. Mr. Tutt also exhibited a long series of a *Melampias*, which he had captured at Le Lautaret in the Dauphiné Alps, at an elevation of 7000—8000 feet. He observed that the specimens exhibited were peculiar in some very important particulars, combining some of the characteristics of *Erebia* (*Melampias*) *Melampus* and *M. Pharte*. He said his attention had been first drawn to this form by some fine examples captured by Dr. Chapman and himself on Mont de la Saxe in 1895. Compared with the Tyrolean examples of *M. Melampus*, this form showed a tendency to a lengthening of the fore-wings and to an obsolescence of the black dots, thus approaching *M. Pharte*, but the females presented none of the typical characters of the female of *M. Pharte*. On the whole, he felt satisfied that the Mont de la Saxe specimens were a form of *M. Melampus*. Mr. Elwes observed that though all the continental butterflies had been so long studied by European Entomologists, he did not think the form exhibited by Mr. Tutt had been hitherto noticed. He considered that Mr. Tutt had made out his case, and he agreed in the conclusion at which he had arrived. Mr. McLachlan, Herr Jacoby, and Professor Meldola continued the discussion. Mr. E. Ernest Green, a typical specimen of *Ephyra omicronaria*, together with what he believed to be a remarkable melanic variety of the same species, taken by Dr. Dudley Wright at Pegwell Bay, near Ramsgate, in September last. Some of the Fellows present, after an examination of the specimen, expressed an opinion that it was a variety of an *Acidalia*, and not of *Ephyra omicronaria*. Mr. Goss stated that Mr. Harry Fisher, the botanist to the Jackson-Harmsworth expedition, had returned to England. He hoped that he would have been present at the Meeting to exhibit a few minute *Diptera* and other insects which he had collected in Franz Josef Land. Mr. McLachlan made some remarks on insects and flowers in high latitudes, and Mr. Elwes, Sir George Hampson, and Professor Meldola also commented on the subject.—H. Goss, *Hon. Sec.*

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> "J'engage donc tous à éviter dans leurs écrits toute personnalité, toute allusion dépassant les limites de la discussion la plus sincère et la plus courtoise."—*Laboulbène.*

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